

Weather in the Cockpit

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THE PILOT IS READY TO DEPART, but the FBO is closed already and there is no pay phone or other way to contact flight service for a weather briefing. Is the pilot worried about taking off without getting a weather briefing? Not at all! He simply enters the cockpit and activates his satellite phone and the **Control Vision Anywhere WX™** software on the PDA mounted on the control wheel. With a couple of taps on the screen, the PDA is downloading the national Nexrad map and the METARs and TAFs for all airports within 250 nm. In less than a minute the pilot can see what the current forecast weather is in the local area, including any convective activity and cloud tops. Next he uses the navigation software to reposition the aircraft to his destination and initiates another weather download. He carefully checks the current forecast weather and determines he would be wise to stop for fuel to ensure he has IFR reserves at his destination. He repositions the aircraft to the halfway point on his trip and selects an airport with suitable weather to serve as his gas stop.

After putting the aircraft back at the departure airport and updating the local weather, he uses the **Anywhere Airmail™** software to send an e-mail to his wife to tell her when to pick him up at the airport. Once en route he encounters stronger headwinds than he anticipated, so he again e-mails his wife and tells her he will be late. She replies that she will have to work late, so she could not get there any earlier anyway. As he gets in range of the fuel stop he calls up the approach plate on his PDA using Control Vision's **PocketPlates™** and, while intercepting and flying the final approach course using his normal instruments, he takes advantage of the additional situational awareness afforded by the scanned approach chart on the PDA showing his location on the approach. He is worried about possible icing en route to his destination, so he again checks the cloud tops on the satellite imagery to be sure they are below the freezing level.

A few years ago this scenario would have been laughed off as total fiction, but all these features are currently available through the Anywhere WX software, or will be shortly. I recently added the Anywhere WX Software to the Anywhere Map program I use on a Compaq iPAQ. Control Vision (www.anywheremap.com) supplies a satellite phone and the necessary software to activate the weather capabilities of the standard Anywhere Map software. The satellite phone attaches with Velcro anywhere in the cockpit that it can get a good look at the sky with its antenna extended. In my Twin Comanche this meant putting it by the window above the armrest on my left side. The rest of the wiring is actually simpler than what I had before, as functions previously performed by an integration box are now combined with the GPS receiver, eliminating the extra box needed for the earlier system.

The system is also simple to operate. Aside from turning the satellite phone on during the initial startup, all functions are handled through the Anywhere software on the

iPAQ, so there is no need to access the phone in flight unless you want to use [it] to make a call. Once the iPAQ has been turned on and the Anywhere Software has been activated, one of the “big buttons” available on the screen labeled “Wx” takes the user directly to the weather controls. At this point you can select either “GET NEXRAD” to access the national weather radar picture only, or “RAD + METAR” to load both the Nexrad map and all the Metars in a 250-nm circle around the current aircraft location.

The Nexrad radar information seems to be getting most of the attention in the articles I have read. There is an obvious advantage during convective activity to be able to plot the latest Nexrad map. I have an Insight StrikeFinder® that is very effective in showing me where the thunderstorms are located, but it still is nice to be able to look ahead and get the big picture of how the storms are developing and what the best path through any storms might be. I have always found it difficult to get a good idea of storm locations as the Flight Watch briefer rattled off a series of VORs or cities I am often not familiar with. I would struggle to jot down what the briefer told me and then get out my flight planning chart and try to find the locations mentioned and somehow conjure up a mental picture of the location of the storms. In a complicated weather situation, that is not a great way to try to make critical decisions about the best path to take. With the Anywhere WX software I can simply tap one button and get a good picture of exactly what lies ahead. This saves time and leads to much better in-flight decision-making.

Despite all the advantages of the Nexrad presentation, I actually think the unique ability of the Anywhere Wx software to display METARs and TAFs in the cockpit may turn out to be more useful in the long run. While convective activity is usually either widely scattered or grouped together in a squall line, low ceilings and visibility can cover large areas for an extended period of time. My last trip, before I installed the Anywhere Wx software and equipment, demonstrated how useful this feature might be, especially when conditions are not turning out as forecast. I was heading back home to Arizona after spending a month in Marietta, Georgia, providing Error Prevention Training to the folks at Lockheed Martin who are putting together the new F-22 Raptor fighter. The conditions were not bad as I departed Cobb County Airport early in the morning and quickly climbed through the low ceilings and fog stretching from Marietta into eastern Arkansas, but the weather was supposed to be clearing by the time I reached my planned fuel stop at a small VFR-only airport in western Arkansas.

As I headed west, I started checking the weather and was surprised to hear reports of freezing fog at the airports along my route. This was something I had never encountered in my 35 years of flying and I certainly didn't like the sound of it. While I was safely cruising well above the fog, I shuddered to think what an approach might be like if I had to descend in an emergency. As I proceeded westbound it also became evident that the fog was not lifting as it had been forecast to do. I realized that making my planned VFR fuel stop was not very likely and called Flight Watch to try to select a new fuel stop with an instrument approach.

After several calls I still didn't feel like I had a good mental picture of what the conditions were and where the fog ended. The briefer had provided reports at several

airports, none of which was suitable. When I looked up one airport I was surprised to learn it was a private field. Finally I asked the briefer for the conditions at Fort Smith. The weather there was above ILS minimums and the temperature was above freezing, so even though I still had over two hours of fuel left and probably could have flown past the fog, I decided to do the conservative thing and land at Fort Smith for fuel. I shot an ILS almost to minimums, but by the time I got fuel, the fog was finally lifting and the weather was clear just west of Fort Smith.

If I had had the Anywhere weather information available on my iPAQ, the entire situation could have been easily resolved in a couple of minutes without a single call to Flight Watch. By selecting the "NEXRAD + METAR" button on my screen I could have quickly downloaded not only the current radar map, but also all the METARs in a 250-nm circle around my location. Due to the lack of convective activity, the Nexrad would not have shown anything, but the weather at each airport with reporting would be indicated by a small square with a diagonal line across it. The upper left quadrant indicates the ceiling with a white quadrant representing a ceiling above 3,000 feet, a yellow quadrant indicating a ceiling between 1,000 and 3,000 feet, a red quadrant showing that the ceiling is between 500 and 1,000 feet, and a purple quadrant indicating a ceiling lower than 500 feet. The lower right quadrant indicates the visibility at that airport, starting with over five miles for a white quadrant, then three to five miles for a yellow quadrant, one to three miles for a red quadrant, and less than one mile for a purple quadrant.

This system can thus provide information about 16 different combinations of ceiling and visibility, starting with a white square that indicates good VFR (ceiling over 3,000 feet and visibility greater than five miles) and proceeding through the different combinations of white, yellow, red and purple to finally use a purple square to show low IFR weather (ceiling less than 500 feet and visibility less than one mile). Thus a pilot can get a quick representation of the surface weather over a large area. The edge of any fog or other adverse weather would be clearly delineated by the color of the squares. The specific Metar for any airport with weather reporting can be accessed by tapping on that airport, then selecting the "WX" tab on the airport information screen. The screen then shows a translation of the current Metar followed by several actual Metar reports. TAFs will soon be available also.

With the Anywhere Wx Software I could have easily seen how far the fog extended and could have quickly determined if I had enough fuel to get beyond the fog. It would have also been easy to find an airport that was above IFR minimums when I decided to land for fuel. By slewing the aircraft on the map I could look ahead on my route, and by temporarily positioning the airplane to a different location I could get the METARs for any area of the country. The total price for the Anywhere Wx System is \$2,695. This includes the latest Compaq iPAQ and Wx Flight Planning Software for a desktop or laptop computer. With the included yoke mount, bag and six months of free software updates (\$115 per year after that), it is truly a portable "plug and play" navigation and weather reporting system that will work in any aircraft. The satellite phone service, which will work anywhere in the world with or without the iPAQ

connected, runs \$24.95 per month and \$0.99 per minute. Most downloads take less than a minute, so the 100 minutes included with the purchase will last quite a while. The iPAQ can be used as a pocket PC when not in the air, running programs like Microsoft Pocket Outlook and Pocket Word.

Control Vision is continuing its rapid innovation in the amount of information available to the pilot. In addition to TAFs, satellite imagery color-coded to indicate cloud tops will soon be available. The latest SFR database is available for free and is updated four times each day. Control Vision's PocketPlates are now available for \$195 per year and will soon work with the Control Vision Anywhere Map or Wx software to show the actual location of the aircraft on the approach. They are also going to make available the Maptrek Aeropaks (\$100 per region or \$400 for entire country), which contain every chart available such as sectional, WACs, TACs, Low and High Altitude IFR en route, and even planning charts and helicopter routes, again with the aircraft location indicated on the chart if desired. The Anywhere Wx Software and satellite phone also allow the pilot to send and receive e-mails while en route or on the ground. Finally, for \$1,000 you can add a three-axis solid-state integrated attitude reference module, which adds backup attitude indicator capability.

With all this information available, it will be much easier for any pilot to assess the weather situation much more quickly and make better decisions about the safest way to proceed. While the information represents a snapshot in time, the download is completed very quickly and the time since the information was "fresh" is continuously indicated on the screen. I have found that even on a long trip through difficult weather usually only a few downloads are necessary. With all this information available, it will be much easier for any pilot to quickly and continuously assess the weather situation and make better decisions about the safest way to proceed.