

## Composite Flight Plan

By Matthew McDaniel

*Editors note—This is the first in a series of articles promised by Matt. They will each tell the story of a Cirrus delivery/ferry flight, including the planning that went into it (route, weather, etc.), changes to those plans, 'outs' built into the plans, judgment calls, and what can be learned from each experience. We hope you find the series enjoyable and useful.*

In March of 2002, while still a Factory Training Instructor for Cirrus Design, I was assigned to train new owner, Dr. Darryl Burns in his new SR-22. Dr. Burns left Duluth (DLH) without his plane due to the demands of his medical practice in Monterey, CA (MRY). It was agreed that I would take two days to deliver his plane. Let the planning begin. The evening before departure, I used various Web sites and Flight Service to look at the forecast, using a large aviation wall map to get a rough overview of the route. From there I went to my stack of out-of-date IFR Enroute Charts and WAC's (which I save for flight planning & instruction) to pick two feasible routes. A fairly quiet weather pattern was forecast across both routes, so I elected to take the more direct one. This route had me overnighing in Salt Lake City (SLC) on day one. From there I would head west toward the Reno, NV (RNO) area, which provided MEA's that I could manage without supplemental oxygen and could thus do IFR if necessary. From Reno, I planned to remain on the Victor Airways into MRY to safely avoid the mountainous terrain. It looked

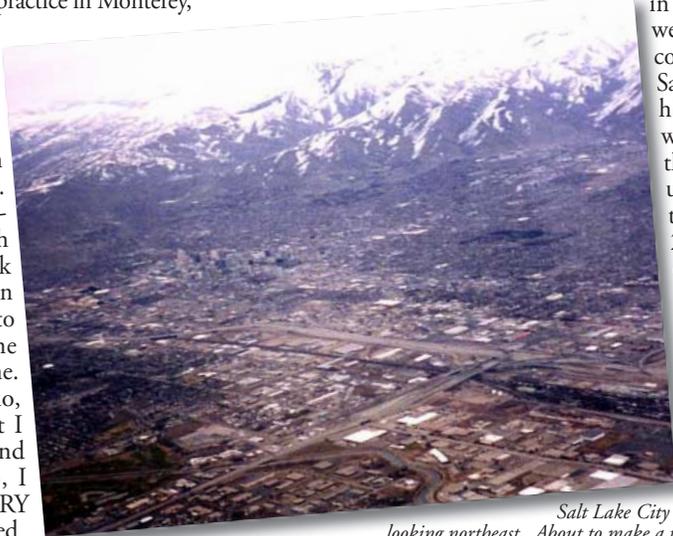
pretty straightforward. This would be my third trip to the west coast in a Cirrus in as many months.

### Day One, Duluth, Minnesota to Salt Lake City, Utah:

The morning of the first day shone bright and clear with not a cloud in sight. A check of the weather revealed the same conditions all the way to Salt Lake, except for some high cirrus clouds that would develop throughout the day. There was some unfortunate news though...headwinds of 25 to 45 knots over the entire route! It would be a long day even without having to fight weather.

I departed DLH for St. Paul, MN (STP), where I would purchase the required charts for

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*Salt Lake City (Flying along west side of city, looking northeast. About to make a turn east to intercept the ILS).*

## The Kids Have Come Home

By Robin Lin

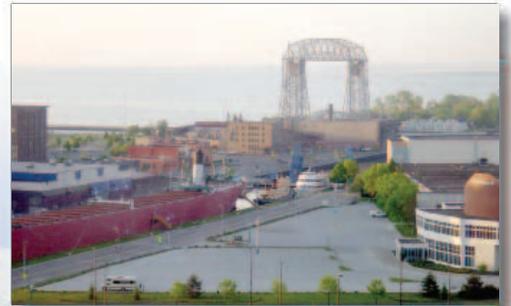
*Editors note—This issue of the COPA newsletter was finalized shortly after the great Migration. Robin kindly agreed to quickly send in this personal report on her and her husband Steve's experiences. More extensive coverage of the Migration will appear in the next newsletter. The photos accompanying this article were supplied by Mike R*

Kate Andrews of Cirrus Design said it best when she said, "the kids have come home." The first ever Minnesota Migration was a great success. Over 85 planes and 200 people attended the event, whose planning was a work of genius. The weather in Duluth for the entire weekend could not have been any better. We had sunny skies, a slight breeze, very few clouds and it was, dare I say, a bit warm? Upon arrival in Duluth, Steve and I taxied over to the parking area and Michael Bush arrived immediately after us. The minute we opened our doors we were greeted by a couple of Cirrus folks who were there to help us with our bags and shuttle us over to the main

building. We arrived at the new Customer Center and checked in.

We filled out several forms and were given our 'greaty bags' which were indeed great! They are black bags which can be used either as backpacks or tote bags and can accommodate laptop computers. Inside the bag we found an assortment of can coolers, stickers, pens, baseball caps, mini-coolers and cleaning products from various vendors. Also inside were really nice black polo shirts embroidered with the Cirrus logo and 'Migration 2003'.

If you haven't been to the Cirrus factory in the past year you really should pay them a visit. Their new customer delivery building is amazing. They have a beautiful lounge, conference rooms, great showrooms and, of course, the Cirrus Connection shop, where you can buy all your favorite Cirrus



*City of Duluth, with the DECC (Duluth Entertainment and Convention Center), venue for our Banquet, in the foreground on the right*

apparel. The social event the first evening was at the "The Depot" Train Trolley, filled with amazing antique rail cars. Everyone was especially impressed by the massive steam engine in the middle of the building. We also had the opportunity to see a train car used to plow snow up to fifteen feet deep (some of us East Coasters remarked that this would have been particularly useful given the winter we had this year!).

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*The tired gaggle relaxes at a traditional migration rest stop*

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the trip. I always carry VFR and IFR enroute charts and approach plate books for the entire route. This prevents the problem of a diversion to an airport I don't have charts for. I experienced mostly a crosswind on this first short leg. However, an updated weather briefing said the next leg would be different.

As I headed out of STP for my first fuel stop of Rapid City, SD (RAP) I found the forecast winds aloft were unfortunately fairly accurate. I leveled out at 4000' to stay down in the weaker headwinds. This gave me a groundspeed of 150ish knots, running at 75%/Best Power for 30 knots of headwind component! It wasn't long before I was forced to 6000', and then 8000', for terrain clearance and radar coverage. At 8000' I was down to 126 knots groundspeed for 54 knots of headwind! This was nine knots greater than forecast.

I was happy that I had topped off at STP (even if only about 15 gallons), since I would need all of it to make it to RAP with safe/legal IFR reserve fuel. I always flight plan to land with at least an hour of gas in the tanks, or 45 minutes if I have to divert to an alternate (which includes fuel factored in for approaches). Today was one of those days where I would push right to my personal fuel minimums to make the planned destination. I started combing the charts, and moving maps and came up with 3 alternate airports (Huron, Pierre & Phillip, SD), where I could stop earlier for fuel if the headwinds got any worse. Fortunately, the wind never got any worse and I pressed on to RAP, where I topped the tanks and ordered a lunch to go. Another check of the weather told me to expect nothing more than high cirrus clouds and decreasing headwinds into Salt Lake City. I was airborne again in less than 45 minutes, leaving the beauty of Mt. Rushmore and the South Dakota Black Hills behind me.

On the leg to SLC I needed to climb to 10,000' in order to fly an IFR off-airway route using GPS direct. I was heading direct to Ogden, UT, where I would turn south and descend into SLC on the west side of the Rockies. After level off, I set up the autopilot and proceeded to eat my much-needed lunch and to hold off dehydration with a bit more liquid than I should have consumed. Within an hour of takeoff my bladder would begin to protest slightly! Prior to crossing the biggest hills east of the Salt Lake and Ogden, UT areas, I had to climb to 12,000' for terrain clearance. The trip was going quiet smoothly and I was doing about 150 knots groundspeed again. The weather was great, the winds were letting up and the scenery was magnificent.

So, what could be wrong? Well, the climb to 12,000' only made my bladder expand and made me curse my lunch drink decision. It sent me reaching for the relief bottle I always carry. Oh no! I forgot to take it out of my luggage, which was safely strapped down in the baggage compartment. Oh goody, yet another opportunity to curse myself, which I could do continuously for the hour or so now remaining in the flight.

About 45 agonizing minutes later I was crossing the mountains just east of Ogden, praying that my request for an early turn toward SLC be approved. It was approved, but only about 5 miles early. I was then instructed to begin my descent into SLC and keep my speed up (as if I were planning on slowing down now!). Thinking this was a good sign of getting a short approach was wrong. They started vectoring me with gusto to get the heavy jets set up for their approaches. I reported the field in sight, hoping for a visual approach. No dice. I was told I would be following a 737 and a 767, unless I thought I could keep my

speed up enough to fit in the middle of their approach sequence. I replied, "I can give you 180 knots to 3-mile final" (remember, I have to pee like a Russian Racehorse by this time). With surprise in his voice, the controller responded, "Uh, that won't be necessary, turn left heading 090 to intercept the ILS, maintain 160 to the marker and 140 to 2-mile final, you'll be following the 737 currently at the marker and the Delta Heavy (767) will follow you."

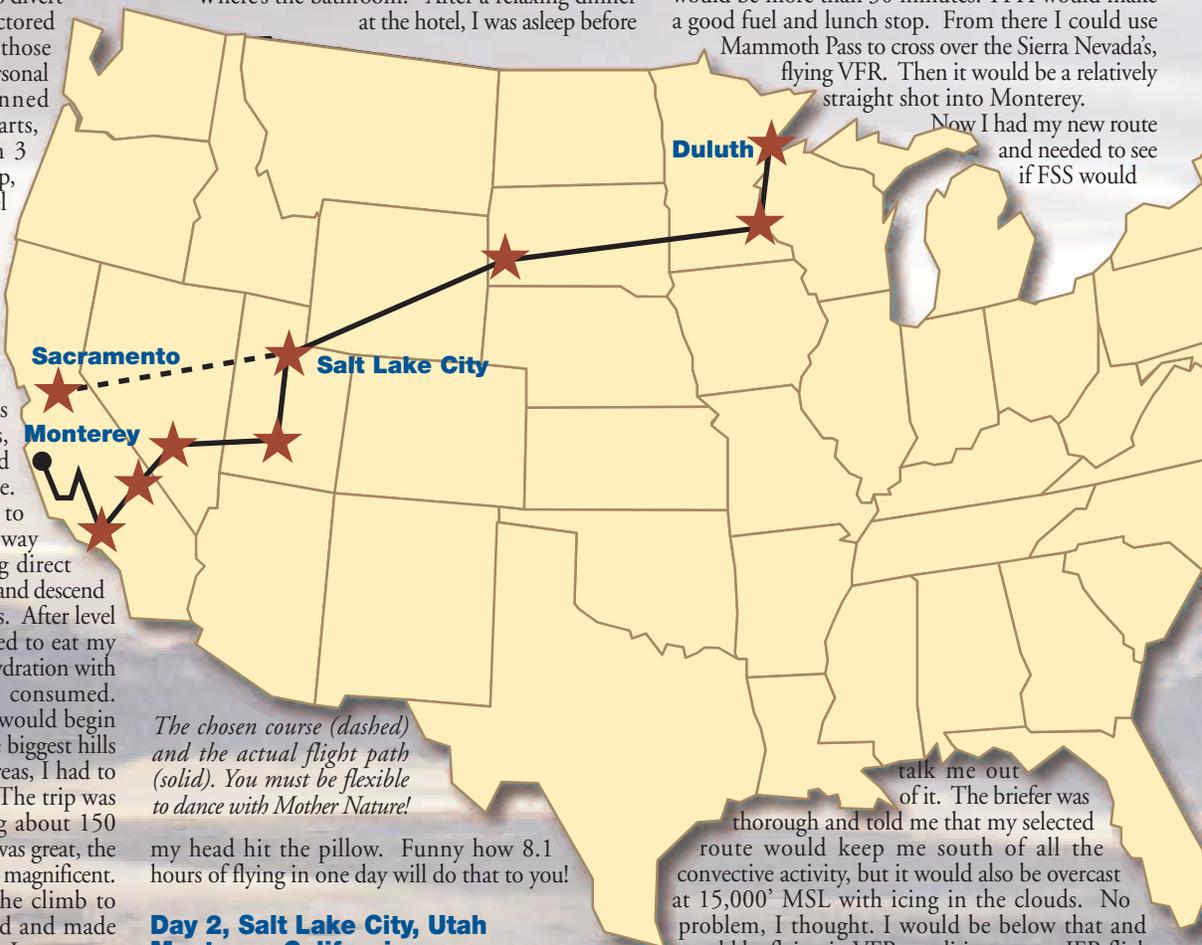
The ATC Gods were smiling on me. I crossed the numbers at dead idle, doing 120 KIAS in a slight forward slip. I threw down the first notch of flaps at 119, the second notch on-speed (104), and then I put it a couple inches above the runway and just waited to slow down (12,000 foot runway). I took a high-speed turnoff, and Ground then read me this long clearance with hold-shorts and multiple turns. She was shocked when I read it all back without error (I had already briefed myself on the airport layout and had my airport diagram at the ready). After landing I parked the plane, shutdown, and completed the checklist, with one question for the lineman, "Where's the bathroom?" After a relaxing dinner at the hotel, I was asleep before

somewhere where the terrain left me a wider variety of choices for departing in a westerly direction while avoiding weather problems.

Nonetheless, SLC was where I was, and Monterey was still where I needed be. Weather had eliminated my westerly route and I knew (even without looking at the charts) that terrain would not allow me to simply go around the weather off-airway. I could not meet Minimum Off Route Altitudes (MORAs) without oxygen, which I was not carrying. So, could I go south to avoid the weather and then west on an IFR flight plan? Yes, I could, as long as I flew the airways, rather than GPS Direct.

The first 160 miles or so would be along V21 southbound at 10,000' and 12,000' to meet MEAs. I could then turn west on V244 towards Tonopah, NV (TPH). Halfway between the westerly turn and TPH, the MEA goes up to 12,200'. So at that point, I would need to cancel IFR and descend to 11,500', or get permission to fly at the MEA on my IFR flight plan. I knew I could technically go to 14,000' for up to 30 minutes, but the length of the airway segment would be more than 30 minutes. TPH would make a good fuel and lunch stop. From there I could use Mammoth Pass to cross over the Sierra Nevada's, flying VFR. Then it would be a relatively straight shot into Monterey.

Now I had my new route and needed to see if FSS would



The chosen course (dashed) and the actual flight path (solid). You must be flexible to dance with Mother Nature!

my head hit the pillow. Funny how 8.1 hours of flying in one day will do that to you!

### Day 2, Salt Lake City, Utah Monterey, California:

This day's weather would prove to be much more work than just fighting headwinds. I began the morning with the weather channel and an on-line look to get the big picture. It was obvious that my planned route was not a great choice today. I had hoped to depart SLC to the west, flying the airways to cross the mountains east of Reno, NV. That route was nearly direct and I could land in Reno and then continue into Monterey. However, the entire north end of the Sierra Nevada's and Reno were buried in convective activity and would be throughout the day.

Time for plan B. Out came the charts to come up with an alternate route out of SLC and into MRY. The problem was that this weather was not forecast. Had it been, I would not have come to SLC to begin with, and would likely be in Albuquerque or

talk me out of it. The briefer was thorough and told me that my selected route would keep me south of all the convective activity, but it would also be overcast at 15,000' MSL with icing in the clouds. No problem, I thought. I would be below that and would be flying in VFR conditions on an IFR flight plan. In addition, I would be tracking my progress on Sectional Charts if I needed to cancel IFR and proceed VFR. Off I went to check out of the hotel and be on my way...with more than a little concern about what the day would hold.

Heading south out of SLC, the trip went smoothly at first, although from my altitude of 12,000' the clouds were looking lower than 15,000'. I turned west at the Milford VOR after about 1.5 hours. The air was smooth in spite of the strong headwinds (again!). Approaching the Wilson Creek VOR, ATC advised I would need to climb to 14,000' on the other side for the MEA. I requested a clearance to fly at the MEA of 12,200' to remain clear of the clouds and any potential icing. My request was granted without hesitation.

Shortly thereafter I could see the cloud layer above me getting closer. It was a matter of time until I

would be in them, in spite of what the briefer had said. About 80 miles from TPH they finally came down to meet me...and there was ice in them! I requested a tops report but there were none within 100 miles of my location. I therefore requested a descent to look for VFR conditions. I was told I could go down to 10,000' for 10 miles, after which I would have to go back to the MEA for terrain separation.

I descended immediately. At 10,000', I was back in VFR, but the bases were ragged and visibility was not wonderful. I cancelled IFR, so that I could stay outside of the clouds under the MEA. I knew I could always turn around and head back down the same airway into improving conditions. I had my 'out,' so I was comfortable to continue. I went back up to 10,500' and studied the sectional.

Then I heard it! The sound of rain on the airframe, not liquid rain, but the freezing variety! It was clearly time to take that 'out.' However, in the few seconds it took me to make that decision, the rain ended. I saw no reason to turn around and fly back through it! However, I couldn't maintain legal VFR at 10,500' anymore, so I descended to 8,500' in the valley under me. I didn't want to be anywhere close to marginal VFR in an area of jutting mountain peaks. At 8500' visibility was unrestricted. It was a little turbulent, but gorgeous.

I knew my exact location on the Avidyne and my Sectional chart. There were only two airports listed on the Avidyne's Nearest Airport page (pretty remote country!). They were each about 30 miles away, in opposite directions. I could make it to either one by snaking through the wide desert valleys visually, at my altitude. TPH was 50 miles away as the crow flies, but this crow's way was blocked by a series of ridgelines.

I decided to turn south down a valley and parallel the ridge until it ended. There I would go around to the west side of it and head north up the next valley. According to the Sectional, repeating this process two more times would put me one ridgeline away from my intended airport. That last ridgeline should have a pass through it, with a road in the bottom of it that goes right past the airport. If that pass was socked in, I could still make it to either of the "nearest" airports with more than my personal minimum fuel.

The last 20 minutes of that leg was bumpy, but breathtakingly beautiful. The end of each valley made a sweeping turn and flowed into another valley on the other side of the same ridgeline. I zigzagged back and forth until I saw what I thought was the pass I hoped to take into TPH. Where's that road? There it is! And, there's the little town on the other side of the pass. The airport should be hidden behind that ridge. I turned into the pass as the now-breaking clouds allowed some sunlight into the area. TPH came into view about 8 miles ahead.

Time to fuel the plane and myself and talk to the weatherman again.

"The airport directory says you have a courtesy car?" "Nope, the starter's busted." The only other occupant of the airport directed me to the antiquated vending machines. The Flight Service conversation didn't cheer me up. I planned to cross the Sierra Nevada's using the Mammoth Pass, which has an MEA of 14,300'. Nonetheless, under VFR conditions, I could cross it at 12,500'. The problem, the briefer informed me, was extensive mountain obscuration along the peaks of the range with unknown cloud tops. Otherwise, the weather was not too bad. I could at least go take a look in VFR conditions, with full tanks, knowing I could return to TPH or another airport closer to the pass, if necessary.

I departed TPH, opened my VFR flight plan, and climbed to 10,500'. With minor deviations for rocks

and clouds, I made my way to V244, which I followed to Mammoth Pass. It was obvious I would not be able to cross the pass easily in VFR, as the peaks were all hidden in a thick band of clouds. However, I could see the band was not that high, so I decided to pick up an IFR clearance and see if I could top it and cross VFR on top (crossing in the clouds was not an option, due to the icing). The controllers clearly working with my requests, were interested in my PIREPs, as they had no previous ones. I climbed to 14,000' and pressed onward. However, the closer I got, the more obvious it became that I would not top the clouds. I went all the way to the wall of clouds, with tops I estimated at 16,000', just to be sure. No dice, just ice.

I'd been at 14,000' without oxygen for 20 minutes and my fingernails were telling me with their bluish hue that it was time to give up this fight. I did a 180 and told them my intentions. He suggested that I could land at Mammoth, CA (MMH) if I wanted. However, I had already heard their AWOS reporting nasty windshear. As I exited the clouds, I could see Bishop, CA (BIH) through the scattered cloud layer and requested a descent into that valley (Owens Valley, I believe) for landing at Bishop. I was given a vector toward Bishop and away from the rocks.

When I descended below all the clouds, into the beautiful valley, I reported the field in sight and was cleared for the visual. The landing in Bishop was uneventful. I thought I would probably be spending the night there, so I sat down for a late lunch. The locals were incredibly friendly and refused to let me eat alone. They questioned me about the plane, where I was from and where I was going. I questioned them about my options given the situation and asked for their recommendations (there is no substitute for local knowledge).

One suggested that I continue south down the valley I was in now, toward the Mojave area. There, they said, is a pass you can cross at 6000' to get across the Sierra Nevada's. I called Dr. Burns to get his opinion, since that routing would cost him a few hours of gas. His said the locals were probably talking about the Tehachapi Pass and, if I was comfortable with it, he would love to not have to wait another day to get his plane. I agreed to give it a try after another weather briefing. The weather down the valley was CAVU, but small pockets of weather were starting to develop on the other side of the ridge. I had several airports I could land at along the way if things got ugly, so I had more options than I'd had earlier in the day.

After another top off of fuel, I departed Bishop VFR and headed south. I started at 7500', and then climbed to 9500' (yes, I was going slightly east now). I was also getting the crap beat out of me. The wind was coming from the west over the ridge and I was getting all the rotors and up/down drafts on the lee side. I would have flown further downwind of the ridge...except the little problem of an active restricted area! I did this for over 130 miles, at 120 KIAS, until I got to Mojave.

My head was sore from hitting the ceiling too many times! I had long since disengaged the autopilot because the turbulence was causing it to fight a losing battle with altitude control. I finally found a pass where the obscuration only went to 10000', west of Mojave. Sure enough, it was the Tehachapi Pass. I picked up an IFR clearance, climbed to 12000' and finally got to the west side of the Sierras.

Finally...smooth sailing into MRY...or not. The small pockets of weather had become big towering cumulus everywhere west of the Sierras. In addition, ice was being reported at the lower altitudes. I started picking my way through the holes. However, one of them closed in on me just as I entered it, and proceeded to give me a nice coating of rime in about half a second. Time for another 180!

I got out of there and made a big vector around the south and west side of the towering cumulus. I was starting to think I would never get to Monterey at this rate. Then, as I rounded the corner of my vector around the weather, I looked north into clear smooth skies. I had finally gotten to the west side of the weather system. I even managed to get about 40 minutes of smooth sailing at 12000' coming into MRY.

However, the pleasantly plump lady was waiting to sing for me! The famous Pacific marine layer was in full force at MRY. Before I could land and put an end to this very long day, I had to shoot the LOC28L approach to minimums...and do it at 180 knots to comply with ATC. Fortunately, the minimums are fairly high and the FAF is a long way out on that approach, which left me sufficient time to slow down for a smooth arrival on Pacific Coast soil. 7.9 hours of bumps, ice, diversions, and never less than a 20-knot headwind all day. The owner was waiting at the airport and congratulations and handshakes were passed all around. Time for dinner and bed!



Salt Lake City (Flying along west side of city, looking northeast. About to make a turn east to intercept the ILS)

## In conclusion, what can we learn for this story?

- Always leave yourself an 'out.' Preferably, leave yourself several 'outs.'
- Never be reluctant to take your 'out.' I did so three times in one day.
- Always carry as much fuel as you can, and never push into your reserve. Set your reserve minimums high. That will leave you time and options when it counts the most.
- Never fear the 180-degree turn. It can be your best friend sometimes.
- Never, ever, pass up an opportunity to get an updated weather briefing, or to gain more information about the conditions you are heading towards, and the conditions you can escape to.
- In unfamiliar areas, pick the minds of the local pilots. They live and fly there and are a resource not to be wasted.
- Know when to say when. My willingness to press on in this story should not be your excuse to do so. I've made my living flying all manner of airplanes for over a decade. I assure you, just as many of my flight experiences have ended in hotel rooms, short of the destination, because I was not willing to push beyond my personal limits.
- Always carry current VFR charts, even on IFR flights. Awareness of terrain could be the difference between life and death. Charts are cheap insurance.

Matthew McDaniel is the owner of Progressive Aviation Services. He has been furloughed from his airline career since the 9/11 terrorist attacks and has been working as a Cirrus-specific instructor ever since. He has approximately 1400 hours in the SR-2X, 3000 hours instruction-given, and approximately 6100 hours total. He can be reached at or 414-339-4990.