



JEFF SKILES

COMMENTARY / CONTRAILS



Night Passage

The mysteries of flight in darkness

BY JEFF SKILES

BEHIND THE WINGS the sun slips below the horizon as the end of day is near. Ahead only a night of inky blackness awaits. The nose is aimed for a point in space named RAFIN, the very first fix on North Atlantic Track Victor. RAFIN is not an actual place, of course. Rather it is the name for a set of geographic coordinates about 100 miles east-southeast of Newfoundland in the Grand Banks. Beyond RAFIN — only a dark night over the North Atlantic. Night flight has a certain mystery no matter what skies are traversed. The hours between dusk and dawn portend risks unassociated with daylight that must be measured by aviators.

THE PERPLEXITY OF REGULATION

The FAA seems to be somewhat inconsistent regarding the definition of night. The Code of Federal Regulations seem to describe night in different ways for different purposes. To fully understand night, let's first establish when sunset is. The astronomical definition of sunset is the exact time when the trailing edge of the sun's orb has dipped below the horizon. Conversely, sunrise is when the leading edge of the sun's orb first breaks the horizon at dawn.

For pilots, the time from sunset to sunrise is when we must have position lights illuminated. Furthermore, if an aircraft has an anti-collision light system installed, those anti-collision lights must be operating unless, in the interests of safety, the pilot in command chooses to turn them off. A good example would be night operations in clouds where the flashes of a beacon or strobe might be disorienting.

AIR ALMANAC

The actual recording of night time in your logbook follows different parameters, however. Here we must look at FAR 1.1 — General Definitions for the description of night. The regulation states, "Night means the time between the end of evening civil twilight and the beginning of morning civil

twilight, as published in the *Air Almanac*, converted to local time.” Of course, we all have our copy of the *Air Almanac* ready to hand.

Belying the name, the *Air Almanac* is incongruously published by the United States Navy. I’ll assume you’ve misplaced your copy and synopsise this hefty book of tables. Civil twilight is the time between sunset and civil dusk when the sun is 6 degrees below the horizon. Civil dusk to civil dawn is when you can log night time as far as the FAA is concerned.

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CIVIL TWILIGHT

The length of civil twilight varies a few minutes dependent on the time of year, but it mostly varies with your latitude. For instance, the length of civil twilight in Oshkosh is 33 minutes on January 1, and 36 minutes on July 1. But in Miami, civil twilight is shorter and varies less at only 25-26 minutes over the course of the year. There are other forms of twilight, namely nautical and astronomical, but the FAA doesn’t use those for any regulatory purpose.

Night currency for pilots follows a third set of rules. FAR Part 61.57(b) states “no person may act as pilot in command of an aircraft carrying passengers during the period beginning 1 hour after sunset and ending 1 hour before sunrise, unless within the preceding 90 days that person has made at least three takeoffs and three landings to a full stop during the period beginning 1 hour after sunset and ending 1 hour before sunrise.”

So, in the period of civil twilight you must have position lights operating even though you can’t log the time flown as night. Also, from civil dusk until one hour after sunset you can log night time and carry passengers even though you are not technically night current. Perhaps these incongruous interpretations only enhance the mysteries of night flight.

COAST OUT

As our aerial ark marks passage over RAFIN we alter course slightly for the less colorfully designated fix of 46 degrees north latitude, 50 degrees west longitude. We will navigate from one lonely latitude/longitude coordinate to another until coming off the track just west of Ireland and “coast in” over LIMRI. In between there will be little but a vast nothingness.

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On this evening, however, we have friends in the night sky. There seems to be a traffic jam of aircraft on North Atlantic Track Victor. NAT tracks — as they are called — are one-way airways, and air traffic is separated by only 1,000 feet of altitude. Since we are well beyond radar contact, aircraft generally are assigned to fly a common speed to maintain separation, namely 0.82 Mach, or about 460 knots. We are at 40,000 feet and ahead and below I can see the winking lights of four other aircraft, each flying at matched speed albeit at differing altitudes. We will caravan through the night, the five of us never gaining nor regressing, all flying in very loose formation until dawn.

SLOP

The lights of the other aircraft ahead are slightly staggered as each employs a different variation of the strategic lateral offset procedure (SLOP). A pilot has the option to fly directly on the track centerline as you might imagine, or we can parallel the route either 1 or 2 miles to the right of centerline to keep from riding in another's wake. Not one for half measures, I'm a 2-mile right man myself.

AN EARLIER NIGHT

I think back on the earliest hours in my logbook when night was a familiar friend. In those days flying cargo was almost universally accomplished between the hours of dusk and dawn. Months would pass with nothing but night time carefully annotated in my logbook.

Tower controllers were often so bored that they would encourage conversations with passing travelers like me. "Where are you going?" "Where have you been?" I suppose such thoughts of far-off destinations seemed adventurous to someone willing away the wee hours in a tower cab.

I can remember one night on departure from Fargo when I overheard the center controller clearing a company aircraft for an approach into Great Falls more than 600 miles away. Upon query the controller said his responsibility that evening covered most of seven states, so sparse was the traffic over the northern plains at 2 a.m.

SKY FULL OF STARS

My favorite memory of night flight is not aloft at all, but rather camped at a remote air strip called Mexican Mountain in the Utah Canyonlands. Many miles from the nearest light bulb, the night sky was a veritable sea of stars never viewed with such brilliance. So bright were the heavens that as the moon rose at our backs our aircraft were delineated against the mountain merging earth, sky, and stars into one fantastic kaleidoscopic canvas.

DAWN AT 40,000 FEET

Our little armada of five airliners crossing the Atlantic will soon experience dawn at 20 degrees west longitude. There we will part ways to deliver our travelers to their disparate destinations across Europe.

The night is short when you are hopping time zones. Only three and a half hours after dusk the sun will thrust its burning orb above the horizon. Its blazing light will feel like daggers in our tired eyes, and we will scramble to deploy every scrap of sun visor for protection. But this is the price for experiencing the most glorious sight, sunrise at 40,000 feet.

With cockpit lights dimmed I have spent many such nights attempting to sense the exact first perception of dawn — and I have failed every time. Suddenly dawn is simply there, a sliver of warmth on the horizon quickly changing from purple to orange to yellow. On this morning, two planets set on high wink in the eastern sky much brighter than the stars around. I am not an astronomer, and I know not which planets they might be. I know them only as friends in the morning sky. Higher still the inky blackness holds sway with stars cast across the heavens as if they are unwilling to cede the night.

For the briefest of moments, sun, planets, and stars share the morning sky until the light of day thrusts unyieldingly upward and the great orb itself shoulders above the horizon. The sun changes fast from sliver, to half circle, to burning sphere. An unstoppable force in the universe. For us, this night is over, and yet tomorrow's night will most assuredly come. As our small planet spins inexorably through the cosmos there will always be a dusk and always a dawn. *EAA*

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