

Light Signals and Airport Lighting

Put a candle in the window. 'Cause I feel I've gotta move.
Though I'm goin', goin'. I'll be comin' home soon.
Long as I can see the light.

Credence Clearwater Revival

Communicating without Talking

First a bit of 'side info': Originally adopted in June 2016, the FAA mandated use of the ICAO flight plan form effective August 27, 2019. The ICAO form requires that each specific communication and navigation equipment / capability be specified (unlike the old FAA form which grouped various equipment under a single code and only one code was used). This scenario uses the ICAO format.

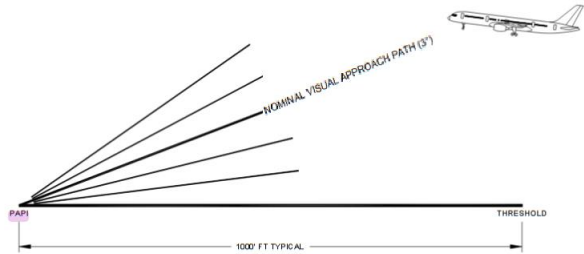
You have filed a VFR flight plan Martin State (KMTN) to Bolton Field (KTZR), 318 NM with an expected arrival time of 6:45 PM, 35 minutes prior to sunset. Your planned altitude is 4500 feet MSL. You file your flight plan with equipment codes SDF/CB2 – which means you have the standard VHF communication and navigation equipment (including ILS capability), DME, ADF and have a Mode A and C transponder and ADS-B extended squitter with in and out capability.

You have requested, and received, VFR flight following (always a good thing to do especially on an extended flight). All is going well until about 30 miles east of Bolton Field (about 10 NM east of the lower portion of John Glenn Columbus International's Class C airspace). Both of your Com radios go dark. Fortunately, your Nav radio and DME are still working (your momentarily think back to the days of units with interconnected parts and with crystals that go out of tolerance and give thanks for modern electronics technology). You try to contact flight following just in case this is some sort of "display fluke" but get no response. Dead communications radios. And, to add to your problems – you forgot your cell phone and you are making this trip alone!!

1. What is the first thing you do? (OK – the first thing you do when any issue arises is FLY THE AIRPLANE!!). At this point you have established that the radio is, at this point, dead, so what is the first thing *from a communication standpoint* that you would do?
2. OK – that done you take some time to verify your position – see the sectional – the red line is your original planned course. What, if anything would you do now? (This expanded view of the [sectional around Bolton Field](#) may be of help)



You now take some time to troubleshoot the communication system – checking switches, breakers, knobs, etc. Still dead. You are now skirting the Class D airspace and, with the sun starting to set, you once again give thanks, this time for a bit of old-fashioned technology. The rotating beacon.

3. The rotating beacon helps you locate the control tower.
What color is the light from the beacon?
4. Class D airspace – are you required to get clearance to enter? Are you required to establish communication to enter? No way to do either by radio (if one or the other is required). Can you enter the airspace and if so, what conditions need to be met and what should you be focusing on?
5. You now see a light from a bit below the beacon – a steady red light from the control tower.
 - a. What does that light mean?
 - b. What, if anything, should you do once you see the light signal?
6. Not much daylight left – in fact you are into twilight with the light dimming fast. You *once again* give thanks, this time for yourself because you have been diligent to keep current for night flight.
Bonus question: What are the minimum requirements for acting as pilot in command for night flight (and, assuming this is not a communication failure but just an ordinary flight by yourself why is night flight currency not an issue)?
7. Getting pretty dark now, in fact, very dark – and now you see a flashing green light from the tower.
 - a. What does this light mean?
 - b. What, if anything, should you do once you see the light signal?
8. Next is a steady green light
 - a. What does this light mean?
 - b. What, if anything, should you do once you see the light signal?
9. You start your approach and you are high – about 1° above the visual glideslope which per the approach plate is 3.00° (so if you were to continue on a glide path with all four lights as shown, your glide path angle would be 4.00°). PAPI lights are located to the left side of the runway.

The diagram illustrates a runway approach. On the left, four lights labeled 'PAPI' are shown. A horizontal line represents the runway, with a 'THRESHOLD' marked at the right end. A 'NOMINAL VISUAL APPROACH PATH (3°)' is shown as a line starting from the PAPI lights and extending towards the threshold. A dashed line represents a higher glide path. A small airplane is shown flying along the nominal path. A horizontal dimension line below the runway indicates a distance of '1000 FT TYPICAL' from the PAPI lights to the threshold.

 - a. What color are the lights when you first start your approach, 1° above the glideslope?
 - b. Which light changes its color first as you descend onto the glide path? What color does it change to? (And, does the light itself actually change color?)
 - c. When that first light changes, if you were to fly a glide path that kept that one light as it is, with the others not changing, what would your angle of descent be?
10. The approach uses a MALSR approach lighting system – what color are the runway end identifier lights (REIL)?
11. You are finally on the ground, rolling out and slowing on the runway, trying to pick a turn-off point. You see a flashing red light. What does this light mean?
12. You decide to exit the runway near the far end.
 - a. What color are the runway edge lights at this point? (This runway has an ILS approach)
 - b. What color were they when you first landed?
13. You abide by the direction given via the flashing red light and now see a flashing green light. What does this light mean?
14. Now in position based on following the two light signals, in #11 and #13, above. At this point, what color are the lights on either side of you?