

# What comes down must first go up

BY ROD MACHADO

airports to help them understand IFR departures in uncontrolled (Class G) airspace. In this instance, big, hard mountains, several thousand feet high, stood sentinel just a few miles west of the airport. These mountains didn't scare Bob because he couldn't see them—it was nighttime (I told you I was mischievous).

While on the ground, Bob called the flight service station from his cell phone and obtained our prefiled IFR clearance. ATC cleared us to our destination airport with the following clearance: Cleared to the John Wayne airport. When entering controlled airspace, fly heading 090 degrees. Climb and maintain 6,000 feet, blah, blah, blah.

Since Class E (controlled) airspace began at 700 feet agl in our vicinity, it makes sense that ATC would begin its control of an IFR airplane at that altitude. After all, ATC's main job is to separate IFR airplanes in controlled, not uncontrolled, airspace (with one exception that I'll discuss shortly).

"Bob," I said, "how do you plan to depart the airport?"

"I'll climb out on runway heading until reaching 700 feet agl, then turn to 090 degrees, blah, blah, blah."

"Bob," I replied, "your IFR Kung fu is strong, but it does have a weak point. A few miles to the southwest there is rising terrain. While it's not likely that we'd hit it if we climbed to 700 feet agl before turning, it makes no sense to fly toward it any longer than we have to."

Studying the sectional chart, Bob said, "It seems that your IFR kung fu is stronger than mine." (Yes, we actually talk this way.)

In reality, when ATC doesn't tell a pilot how to depart an airport under these conditions, the pilot has three departure choices. He can depart with sufficient visibility to avoid hitting any obstacle, he can make up his own IFR departure procedure, or he can use the obstacle departure procedure for that air-

port if one exists. The first option needs no explanation; the next needs only a volunteer. It's the last option that's interesting.

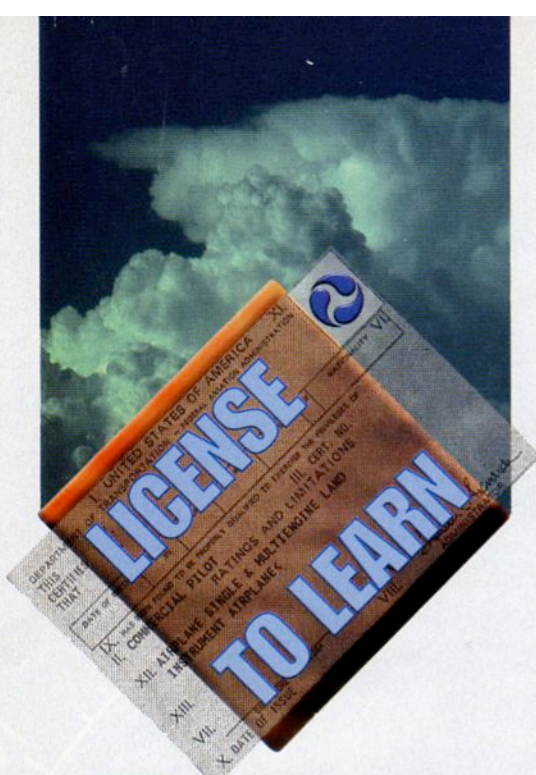
Airports with instrument approaches will have what is known as an *obstacle departure procedure*, or *obstacle DP*, if obstacles exist in the departure area. The obstacles that generate an obstacle DP are those penetrating a 40:1 climb plane beginning at 35 feet above the departure end of a runway. If no obstacles penetrate this climb plane, no obstacle DP will be created for that airport.

If an obstacle DP exists, it will be printed either as text or, if the departure is associated with an RNAV (i.e., GPS) approach or is considered complex (many turns, routes, altitudes, etc.), it will be printed in graphical form as its own chart. Jeppesen users will find the text form of the obstacle DP at the very bottom of the airport diagram chart. Graphical obstacle DPs will be found along with the other standard DPs (the SIDs we just mentioned) next to the approach plates for that airport.

Users of the FAA National Aeronautical Charting Office, or NACO (formerly NOS), instrument procedure charts will find all obstacle DPs in textual form in Section C of the approach chart booklet. If the obstacle DP is printed graphically instead, it will be found with the NACO approach plates for the airport.

You can distinguish the graphical obstacle DP from "regular" DPs because the word *obstacle* is printed in the top-middle portion of the chart. Well, it's supposed to be there, anyway. As of this writing, a few of the graphical obstacle DPs on NACO charts aren't showing the word *obstacle*. Yakima, Washington's Zilla One Departure is a case in point. I've been told that this won't take an act of God to correct—otherwise, we'd have to rename it the Godzill...never mind.

When Bob flipped his approach chart over, the obstacle DP was clearly visible



**W**hat goes up must eventually come down, especially if we're talking about airplanes. The gravity of that statement is well understood. It seems that pilots are quite competent at bringing airplanes down, even during tricky instrument approaches. It's the "going up" part that sometimes confuses them, especially during IFR departures out of unfamiliar airports. At least a few folks aren't sure how to do it without knocking birds out of their nests, sawing TV antennas in half, or head-butting our granite planet. Perhaps I can help.

My recent concern over instrument departures began while giving an instrument proficiency check to a relatively experienced, IFR-rated pilot whom we'll call Bob. On two previous IFR departures, we took flight into controlled airspace from airports having operating control towers. Under these conditions, ATC normally assigns a direction of takeoff or turn, or an initial heading to be flown after takeoff. It may even assign a pre-packaged routing now known as a *departure procedure*, or *DP*—which we once called a *standard instrument departure*, or *SID*, for short. DPs are printed graphically and are useful in helping ATC manage IFR traffic at busy airports. They also prevent controllers from collapsing a lung or two as they needlessly repeat the same clearance over and over again.

Things were different this time. Our third instrument approach was into an uncontrolled airport having no surface-based controlled airspace. This didn't happen by accident. Mischievous instructor that I am, I always take my instrument students to these types of



on the reverse, bottom side of the approach chart. It read, "OBSTACLE DP: Rwy 25 climbing right turn, all aircraft continue climb to the DUH VOR."

"Can we use the obstacle DP without telling the controller?" asked Bob.

"You bet," I replied. "When departing IFR into uncontrolled airspace, the controller typically won't assign an obstacle DP unless there's an IFR traffic conflict. Since we weren't assigned the obstacle DP, it's our choice whether or not we want to use it. So let's use it."

Admittedly, given our clearance and

proximity to terrain, we probably wouldn't have been in any danger if we didn't use the obstacle DP for this airport. Suppose, however, that you were departing Glacier Park International Airport in Kalispell, Montana. Let's also suppose your clearance read: Cleared to the Calgary airport direct Kalispell VOR direct Calgary VOR, blah, blah, blah. Given the steeply rising terrain to the east and northeast, it would be easy to get caught between a rock and a seat cushion.

For some, this clearance seems to imply that they can depart any runway

and turn in any direction toward Kalispell VOR. Apparently a pilot who received this clearance many years ago thought something similar. With strong winds, shallow turns, and the climb performance of an overloaded Cessna 150 freighter, the pilot forged his own sad, metallic fate by flying into a mountain.

The word *direct* doesn't imply permission to hit anything. When you're not told how to depart the airport (as in the above situation) it's far more reasonable to fly the obstacle DP if one is available. When you're clear of obstacles, then fly direct as indicated in the clearance.

As Bob lifted off from our uncontrolled field, he began an immediate right turn as described in the obstacle DP. "Whoa, Aileron Commander," I said as I stayed our turn. I explained to Bob that when a regular or obstacle DP requires a turn after departure, it's assumed that a pilot will wait until reaching 400 feet agl before beginning the turn (unless otherwise stated in the DP). It's also assumed that an airplane will climb no slower than 200 feet per nautical mile during departure (at a 90-knot groundspeed, this equates to a 300-feet-per-minute rate of climb).

Bob nodded, then called departure control, "SoCal Departure, this is Cessna Two-One-Three-Two-Bravo with you."

"Cessna Two-One-Three-Two-Bravo, this is SoCal Departure, radar contact."

"Bob," I queried, "what does the term *radar contact* mean?"

"It means the controller can vector us if he wants to."

I mentioned to Bob that the term *radar contact* only means that the controller has identified the airplane on radar. It doesn't necessarily mean that the airplane is in a position or at the minimum altitude to be vectored. Nor does it mean that the controller is able to advise a pilot that he or she is flying toward something they could hit during climbout. Only with the issuance of radar vectors (i.e., specific headings) does a pilot know that the controller is now capable of vectoring the airplane.

Like many IFR pilots who rarely fly out of nontowered airports, Bob wasn't familiar with the obstacle DP and how to use it. Perhaps cloud-penetrating glasses or enormous curb feelers attached to the airplane's wings will render obstacle DPs useless someday. Until then, if one is available, use it when ATIS doesn't tell you how to depart the airport. □



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