Protecting Government from Liability: The FAA's Approach to Flight Safety

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For the past twenty years, the FAA has been passing regulations restricting where pilots can fly. The FAA claims its sole purpose is to make flying safer, but FAA rule making clearly has been designed to protect the government from liability. The end result is an unnecessarily complex system that requires the most detailed working knowledge of airspace regulations from part-time private pilots.

Avoiding mid-air collisions between commercial flights and private aircraft requires pilots of both types of planes readily understand and follow a system of easily comprehensible rules. It is a goal that can be achieved by having simple rules that are easily understood and followed by every pilot.

Unfortunately, today's system has been made extremely simple for the professional and well-trained airline pilot who operates aircraft by instruments under the instrument fight rules (IFR) and very complicated for the general aviation pilot flying under visual flight rules (VFR).

The present regulatory scheme has evolved slowly, but the most drastic revisions came in response to spectacular accidents in which the FAA was sued.

For example, today's requirement that all aircraft flying between 18,000 and 60,000 feet above sea level must adhere to an IFR flight plan resulted from the collision of two airliners over the Grand Canyon decades ago. An accident in San Diego in the late 1970's, in which a PSA Boeing struck a four passenger Cessna,

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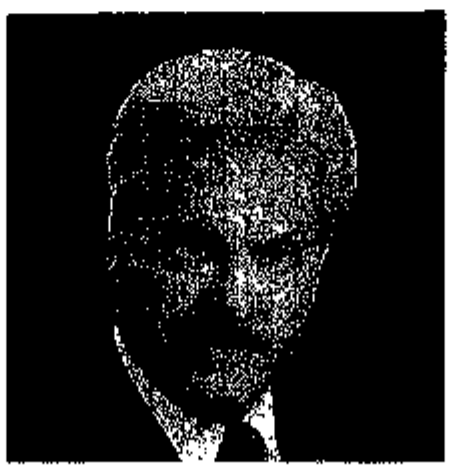
while both aircraft were under FAA radar control and operating with prescribed clearances, accelerated the FAA's airspace restriction efforts. The recent Cerritos tragedy which occurred when a Piper aircraft without clearance crossed the path of an Aeromexico jet within the Los Angeles Terminal Control Area helped stiffen governmental attitudes toward traffic rule enforcement.

Because the system has been designed in response to crises, it is a patchwork that places the heaviest working load on private pilots, as opposed to professional airline pilots, while ignoring the fact that the overall safety of the system heavily relies upon the non-professional pilot. Private pilots must maintain a safe distance from commercial aircraft, and at the same time perform a myriad of chores that make the airline pilot's job easy in comparison.



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The extremely heavy workload placed on private pilots by the FAA makes little sense. Private pilots, as a practical matter, have to immediately recall, and be able to instandy and correctly apply, far more FAA rules and regulations than their airline counterparts. It is a system that screams for simplicity to maximize safety, but the FAA's response has been to protect itself and continually increase the complexity of an already over-complex system of regulations.

The following example typifies how the system works today. Imagine yourself at the controls of a private airplane approaching Palo Alto Airport from Sacramento at night, flying under visual flight rules. You are called by the controller just as the lights of a large jet pop out of the bottom of the overcast off your left wingtip. Every word after your call sign is blanketed by an ear-splitting squeal caused by another pilot's accidentally transmitting at the same time the controller speaks.

You must instantly apply the Federal Aviation Regulations, FAA Advisory Circulars, your airplane's FAA approved Pilot's Operating Handbook, the basic rules of flight learned in primary training and keep in mind the multiple sections of regulated airspace on the San Francisco Sectional Aeronautical Chart. At the same time, please continue your heading, controlling for the southerly winds and mild turbulence caused by the hills below, maintain your altitude, keep your wings level, and look for navigation lights in the dark from other airplanes on your left, right and coming straight at you from your Palo Alto destination. Now, what

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did that controller tell you to do? Is there a hazard present that you cannot see?

This is not a game, but a real, high stakes test of the FAA's regulatory system, designed to provide safe flight for both the airlines' passengers and yours. It all boils down to the decisions you are about to make as a private pilot.

To safely complete this flight you must obey the right-of-way rules, maintain the proper legal distance from clouds and ground, remain clear of the San Francisco Terminal Control Area, the Oakland Airport Radar Service Area, and the Hayward and Moffett Airport Traffic Areas. You must provide your own navigation to your destination and monitor the Automatic Terminal Information Service broadcast for Palo Alto to know which approach and runway to use, the wind direction, and the correct setting for your altimeter, while remembering the ATIS identification code word so you can repeat it to the Palo Alto Tower to prove you heard the broadcast.

Meanwhile, the controller still awaits an answer to the call placed to you. None of this is training. While it may quicken your pulse and accelerate your breathing, this situation is a typical flight situation you experience as an FAA approved private pilot.

To earn the right to fly under visual flight rules as a private pilot, your training could have consisted of as little as 20 hours of flight instruction, 20 hours of solo flight practice, correctly answering 35 of 50 multiple choice questions on a written test, and passing an on-the-ground oral quiz and a flight test. Your pilot's certificate is good for life. It entitles you to fly a piston-powered single engine airplane of U.S. registry weighing less than 12,500 pounds anywhere on earth, as long as you do not carry passengers or property for hire.

Tonight, to preserve your night vision, you dim the cockpit lights to provide the minimum illumination for your map, properly called a Sectional Aeronautical Chart, issued by the National Ocean Survey every six months. It is complicated to read because, in addition to picturing the hills and mountains, it is also a crazy-quilt diagram of Federal Aviation Regulations. The magenta and blue tint bands mark areas known as controlled airspace. In these areas, you must avoid clouds by

staying 500 feet below, 1000 feet above, and by keeping a horizontal distance of 2,000 feet. In addition, you must have at least three miles of visibility mandated by the visual flight rules or else you cannot fly or land here. The blue arcs of airspace that fan out from San Francisco International Airport (SFO) are segments of the San Francisco Terminal Control Area which requires special aircraft equipment and special controller approval prior to entry. The braided magenta ropes about the Alameda Naval Air Station, Oakland, and Hayward airports are the Oakland Radar Service Area, a special zone that requires two-way radio communication with Approach Control before penetration. Hayward, Oakland, Alameda, and San Jose airports are individually surrounded by broken blue lines to mark the presence of Control Zones where special rules apply. SFO also has a control zone marked with a circle formed of T's which tells you that with a special clearance you cannot operate an airplane here if there is only one mile of visibility, if clear of clouds (cloud separation rules of 500, 1,000, and 2,000 feet do not apply). You must pay special attention to airports depicted in blue. If the tower is operating, you must establish radio communications from five miles away if you are landing or flying lower than 3,000 feet. Do not look for the five mile boundary of the Airport Traffic Area; it is for you to estimate. The yellow areas on the map are purely cultural, showing the light pattern of ground settlement as seen from the air at night.

Since it is a moonless night, you have planned your flight route carefully to avoid nearly invisible unlit terrain. To make certain of your position, you have chosen to fly along the 177 degree course from the Sacramento VOR (very high frequency omni-directional range), a radio navigation transmitter, until intercepting the 210 degree course to the Woodside VOR on the hill behind Palo Alto Airport. If clouds have formed since you left Sacramento or fog has settled, flight law requires you to deviate on your own judgment, remaining clear of clouds and ground.

Add one more complication, intermittent rain has begun to splatter your windshield, making ground lights seem wavy and fractured as the windstream blows the water across the windshield. That large airliner on your left is descending on a crossing course and will be far to your right in Oakland by the time you intercept the wake of heavy turbulent whirlwinds that trail below the large jet as it plows through the air toward Oakland. It is an invisible hazard you must stay below or risk encountering violent turbulence, which is always dangerous, but especially so at low altitude.

The rain has become stronger to your right and the green and white beacon that marks the Hayward Air Terminal seven miles away has just disappeared from view. "Am I still legal (VFR)?" crosses your mind. At the same time, you continue to scan left, center, and right for small aircraft lights, carefully control your altitude, bring the wings back to level as the airplane buffets in the light turbulence caused by the incoming weather, keep an eye on the heading displayed on your directional gyro and your engine instruments, while your ear is tuned to the hum of the engine and the radio as you await an interruption in the radio traffic to report to the controller that the primary advice was not received due to radio interference.

In short, there is a lot going on in your cockpit, especially compared to the same scene from the cockpit of the passing airliner. It's captain is required to fly the Boeing under instrument rules solely by reference to the instrument panel, along the V-107 airway, by staying at the published altitude. The captain's environment is serene because there is little to do except to monitor and control one visual display, called a flight director, that maintains heading through the use of an electronic piloting system. In the right seat, the co-pilot, also a fully qualified holder of an Airline Transport Pilot certificate, is tuning the navigation radios, communicating with the controller, monitoring landing information for Oakland International, and managing the jet's engine power. There is little else for the pilot to do because the flight has remained under the direct supervision of ground controllers since leaving Chicago. Across the country, the airliner has been on instrument flight rules, flying a pre-arranged route at specified altitudes and enjoying radar escort services by ground controllers and direct communications on special radio frequencies warning of any potential air traffic in the craft's vicinity.

The crew's navigational responsibility is to comply with the terms of the IFR clearance received before leaving Chicago. Those terms advised the crew of the exact route and altitudes assigned by the FAA's computer system. The crew's job is simply to follow the FAA's orders so the controllers can keep track of the jet across the United States. Should the jetliner's communication radios fail after takeoff, the clearance will take it from O'Hare all the way to 200 feet above the landing threshold on Runway 29 at Oakland without ever looking out the window; if the white approach lights are visible just short of the runway's end, the plane can descend another 100 feet. Finally, once the red bars on the light array appear, the plane is cleared all the way to the ground.

The workload in comparison to the private pilot is extraordinarily free from complexity. For pilots who do all their flying within the IFR system, the private pilot's VFR map is irrelevant. In fact, the IFR system is so protective of commercial aircraft, and many of the VFR restrictions so new, that many senior airline captains have never flown under the visual rules in Terminal Control Areas and Airport Radar Service Areas.

Put yourself back in the small airplane's cockpit. The jet is now well off to your right. You are descending rapidly to get below the 2,500 feet floor of the San Francisco Terminal Control Area, which

The Totally Unregulated Ultralight Pilot

As long as an aircraft weighs 284 pounds or less, travels no faster than 55 knots at full power in level flight, and carries no more than five gallons of fuel, it is totally unregulated by the FAA. There are no airworthiness, registration, or pilot licensing standards for ultralight aircraft or their flyers. Except with prior permission, ultralight operators are required to remain clear of TCAs, ARSAs and Airport Traffic Areas shown only on aeronautical charts. There is no system of examining ultralight aviators to verify that they have any acquaintance whatever with the FAA's airspace structuring system.

is reserved for instrument traffic. The radio crackles with your call sign, "I say again. Radar Service terminated. Remain clear of the San Francisco Terminal Control Area. Squawk 1200. Good evening."

After acknowledging, you dial 1200 into your encoding altimeter so radar in the Bay Area will show you flying VFR and you switch to your second radio which you have pre-set for the Palo Alto Tower, announce your location and confirm that you earlier listened to the automatic weather broadcast by repeating that hour's special code word.

Time to retard the throttle and slow down to 156 knots, the maximum speed for entering an Airport Traffic Area. Who, pray tell, picked this peculiar number to be the speed limit? The map has been replaced with your written pre-landing checklist and, after you extend the landing gear, you perform each of the items on the list. All good pilots read the printed checklist, while scanning for unannounced traffic and watching for announced aircraft enroute to the airport. You enter the landing pattern heading downwind behind a small Cessna and slow down to maintain separation, turn on the base leg, then another 90 degree turn onto final approach for a landing, having completed a half hour's flight that saved you a two hour drive.

The last ten minutes of that flight required you to recall and apply virtually all the knowledge you acquired in your training. And to get it right the first time.

At Oakland, the Boeing has whistled up to the gate. The captain and first officer are already in the crew bus headed for their hotel. They too have had a routine flight. Leaving Chicago, they were in clouds most of the time until they reached 18,000 feet and entered the FAA's Positive Control Airspace where they remained under direct FAA supervision for the length of the trip. The autopilot worked well, maintaining the ship's heading and altitude and re-balancing the wings to keep the airliner level. On descent, the crew entered clouds at 19,000 feet and stayed in them until breaking out of the bottom in wispy stratus and light rain 14 miles east of Oakland. Throughout the flight, separation from other aircraft and correct altitude was constantly assured by an FAA controller. Once the Boeing broke out of the cloud deck, the co-pilot saw the lights of a half dozen planes, the closest already pre-announced by the radar-equipped approach controller, but all well below the protected TCA airspace reserved for IFR aircraft. Together pilot and co-pilot completed the Boeing's pre-landing checklist on their straight in landing at Oakland.

The FAA's system worked well, but it strategically relies upon the least trained pilots in the sky to honor all the rules, all the time, to make sure the skies are safe for the traveling public.

That's why its time to overhaul and simplify the rules for visual flight. Simple rules will decrease the workload on the private pilot, and the result will be increased compliance, reliability and safety for everyone. ■