CALLBACK

ASRS

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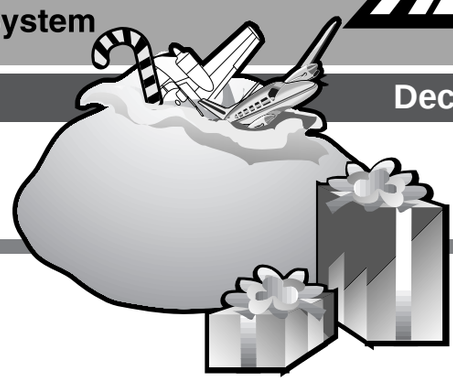
Weighty Decisions



Pilots sometimes take weight and balance matters for granted, especially with a familiar aircraft or an "average" payload. A general aviation pilot, overestimating the aircraft's performance and underestimating the passenger load, reports on the effects of an overweight takeoff in a six-place airplane:

■ *Accelerated to full power, 10 degrees flaps, and rotated at 70 knots. Pulled gear up at approximately 10-15 feet in the air. Sank into the ground at full power, in effect a gear-up landing. After the incident, the aircraft contents were weighed, and actual weight was such that the aircraft was 150 lbs. over gross. I had previously removed the two rear seats, and had estimated the weights.*

Clearly, I should have weighed each of my passengers and their bags. Also, I only guessed about the amount of weight savings that removing the two rear seats would produce.

Pilots also need to consider the trade-off between the performance gained by "cleaning up" the aircraft immediately after takeoff versus the safety of leaving the gear in place until there is no longer a chance of the aircraft settling back onto the runway. Additionally, on some aircraft the gear doors open to allow gear retraction; this temporarily increases drag and decreases lift, reducing aircraft performance.

The Bod Squad

Air carrier crews can find their aircraft overloaded when cabin weights are incorrectly calculated—or estimated—by company dispatch. A Captain tells of the flight of his "heavy" aircraft, a B-727 laden with a football team.

■ *The aircraft papers indicated that the aircraft would be just 100 lbs. or so below its maximum structural gross weight for takeoff. Takeoff was done with an abnormally long ground roll, and climb performance was marginal both dirty and cleaned up. Flight was planned for FL310. At about FL260, rate of climb was less than 500 feet per minute. The aircraft could not make it to FL310 and stayed at FL260. When I rechecked the weight and balance, I saw that we had 100 passengers, and that "normal" passenger-plus-carry-on weight of 212 lbs. was used to calculate cabin weight. I watched these guys disembark; they are gigantic, and all carried very large equipment duffel bags. I think the aircraft was a good 8,000-10,000 lbs. over planned weight, and far in excess of structural gross weight.*

Abnormal passenger loads—troops, football teams, sumo wrestlers, etc.—should require ***actual*** *weights for dispatch.*

The reporter's point is relevant to both the previous report and this incident: the use of "average" weights for passengers, luggage, and carry-on items can lead to gross inaccuracies in calculating gross weight.

Hurry Up and Weight

In the rush for a quick departure, this air carrier crew apparently overlooked the takeoff weight limitation for their assigned runway. The First Officer reports:

■ *After pushback, we began to taxi and the Captain elected to shut down one engine to conserve fuel. It turned out to be a short taxi, so he instructed me to restart the engine. There was not much time between checklist, taxi instructions, and watching for traffic and taxiways at this busy airport.*

The flap and power settings for our calculated takeoff weight are printed on the Automated Weight and Balance that the computer generates. I selected and informed the Captain of the flap setting and power required, but failed to notice that the performance criteria were designated for Runway 4R and we were cleared for Runway 4L, which is considerably shorter. On takeoff roll, it was somewhat evident that the end of the runway was coming up fast. We departed without incident, and realized the mistake while enroute.

Neither of us had checked the runway that the takeoff weights were predicated on. We were 10,000 lbs. overweight on our departure.

When faced with schedule pressures or other time-related constraints, flight crews need to take an extra moment to ensure that potentially critical information does not pass unnoticed.

Keep The Big Picture

An air carrier pilot provides a final thought:

■ *Each trip I gain some sort of new experience. Isn't that what makes flying great? Fly the airplane. Keep the big picture. Think ahead. Don't rush your thinking. Use your crew as a team. Lead the team. And read CALLBACK, of course!*

ASRS Recently Issued Alerts On...
Inflight speed brake failure on an FK-10
EMB-120 inflight engine cowling openings
B757 inflight fuel loss due to a hole in a fuel line
Sabreliner 65 engine failure due to gear door separation
Blending of a Nevada airport's background and PLASI lights

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October 1997 Report Intake	
Air Carrier Pilots	1988
General Aviation Pilots	724
Controllers	119
Cabin/Mechanics/Military/Other	50
TOTAL	**2881**

Assists and Commendations

Many of the "flight assist" stories that ASRS hears about involve observant ATC personnel who come to the aid of pilots in trouble. Sometimes ATC gets help from other sources–as in the case of this general aviation training flight that suffered a loss of engine power over unfriendly terrain, at the approach of dusk.

■ *After an uneventful training flight with multiple touch-and-go landings, we climbed up to 3,500 feet MSL and started back. Just as we were recovering from a practice approach-to-landing stall (power-off stall), at the point of power application, the engine made a loud sound and began vibrating. As we had previously practiced simulated engine failures, I had my student check [the engine failure checklist], and I called Tower, informing them I had a partial power failure, was declaring an emergency and heading direct for the airport. We were about 15 nm West-Northwest, and the Tower gave us a squawk code and asked if I thought I could make it to the airport. I said I would decide at the last suitable off-airport landing site (a reservoir/dry wash which I knew had 2 dirt roads). Having lost 1,000 feet in about 5 miles, I told Tower I was landing in the reservoir and requested assistance in case things didn't work out.*

By the time I turned base for a dirt road I could barely make out, a police helicopter arrived and lit up a landing area and a tree I was able to avoid before touchdown. There were a few scratches from bushes I scraped, but otherwise no injury or damage. One spark plug was found missing and was replaced....I may have been able to make it to the airport on the night of the occurrence, but elected to land off-airport.

Contributing to superlative efforts by the police helicopter and ATC, this flight instructor earns a "well done!" for clear communications and cool decision-making under pressure.

"Getting There" Was An Experience

In another nighttime emergency, this one experienced by a corporate flight crew, all ended well–but getting there was an isolated and frustrating experience, especially for the Captain.

■ *We made a normal nighttime departure. We had just been handed off to Center, level at 14,000 feet MSL, when I noticed a peculiar distorted appearance to the instruments. I smelled smoke at the same moment that I was pointing out the weirdness to the co-pilot. Smoke is not instantly visible in a dark cockpit. ATC was immediately advised. They cleared us direct [to return] and down to 12,000 feet MSL. They then said to contact Approach. So far so good. Then I told the co-pilot to put on his oxygen mask as I donned mine. As I did this, I [knocked] my headset off, but I didn't realize it. I selected 'Mask' on the comm console which allowed me to communicate with ATC. My co-pilot changed frequencies and communicated with Approach. He heard them clear us to 4,000 feet MSL. I heard nothing. No cockpit talk, no ATC. I then remembered that I needed to select 'Cockpit' on the comm console so that he [co-pilot] could hear me by way of a 'hot' mike set-up. I asked him if we had been cleared any lower. He answered, but I couldn't hear him. I was isolated and frustrated. I pulled my mask off and told him I couldn't hear him. He punched on his hot mike about the same time I realized I needed to go to the 'Speaker' to hear anything.*

We were back in business....Positional awareness was excellent. #1 nav had fried internally and was the source of our smoke, #2 nav did the trick. Now I could see the well-lit terminal complex but no runways. We requested that the Tower turn up the runway lights which they did after a few seconds. It was wonderful: Orientation was complete. ATC might want to do this as a regular part of night time emergency procedures. The usual low runway lighting is extremely difficult to pick out against the background of normal city and terminal area lights. Finally, the airport Crash-Fire-Rescue (CFR) personnel were excellent in helping us safely explore what had burned and in confirming the problem was over.

This flight department is now operating on the assumption that we will lose our headsets and must go to speaker in a similar situation.

This crew's experience highlights the need for training in equipment familiarity (oxygen mask and communications radios) in a darkened cockpit. The Captain's suggestion about turning up the runway lighting is also one that ATC facilities may want to consider in reviewing their night emergency procedures.

The Bottom Line...

A general aviation pilot was persuaded by a business associate to undertake a flight into known icing conditions, against his better judgment. After a harrowing in-the-clouds icing experience, an emergency declaration to ATC, and an unscheduled landing, the pilot humbly reported this new resolution to ASRS:

■ *I've flown enough to know when it will be bad. I've flown enough to make good rules. Now I just need to abide by my own rules. When I say "it looks bad," I should stay on the ground.*