NATIONAL ASSOCIATION OF FLIGHT INSTRUCTORS

MENTOR LIVE

Welcome!

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Earn WINGS! Credit

Course Evaluation

NAFI Educational Foundation Giving

LIVE

Beyond the ACS: Tips for Better Instruction

Catherine Cavagnaro, CFI-I, ATP, PhD
Owner, Ace Aerobatic School

LIVE

Catherine Cavagnaro, PhD

- Lead rep and DPE for the Nashville FSDO. She is an ATP-SEL, COM-MEL, COM-SES and glider. She holds CFI,SEL/MEL and Instrument ratings.
- Professor of Mathematics and was Chair of the Mathematics Department at the University of the South. She developed courses in aerodynamics, differential equations, and mathematical modeling using aviation examples.
- OwnerAce Aerobatic School in Sewanee, TN. Widely known expert on spin training, recovery, and avoidance.
- During 2004-2008, served as test pilot, spin demonstration pilot, researcher, and visiting professor of aviation systems at the University of Tennessee Space Institute.
- Inductee 2018 Tennessee Aviation Hall of Fame

PILOT-INDUCED OSCILLATIONS

Along for the ride

Aircraft control: Too much isn't a good thing

BY CATHERINE CAVAGNARO

FLYING THE NAVION on the VOR approach into Tullahoma Regional Airport (THA) that day in 2004 took all the concentration I could muster. Despite constant pitch relief I may have felt after realizing that I wasn't alone in this regard gave way to incredulity at our communal ignorance.

The FAA defines loss of control as an

AOPA *Pilot Magazine,* August 2017

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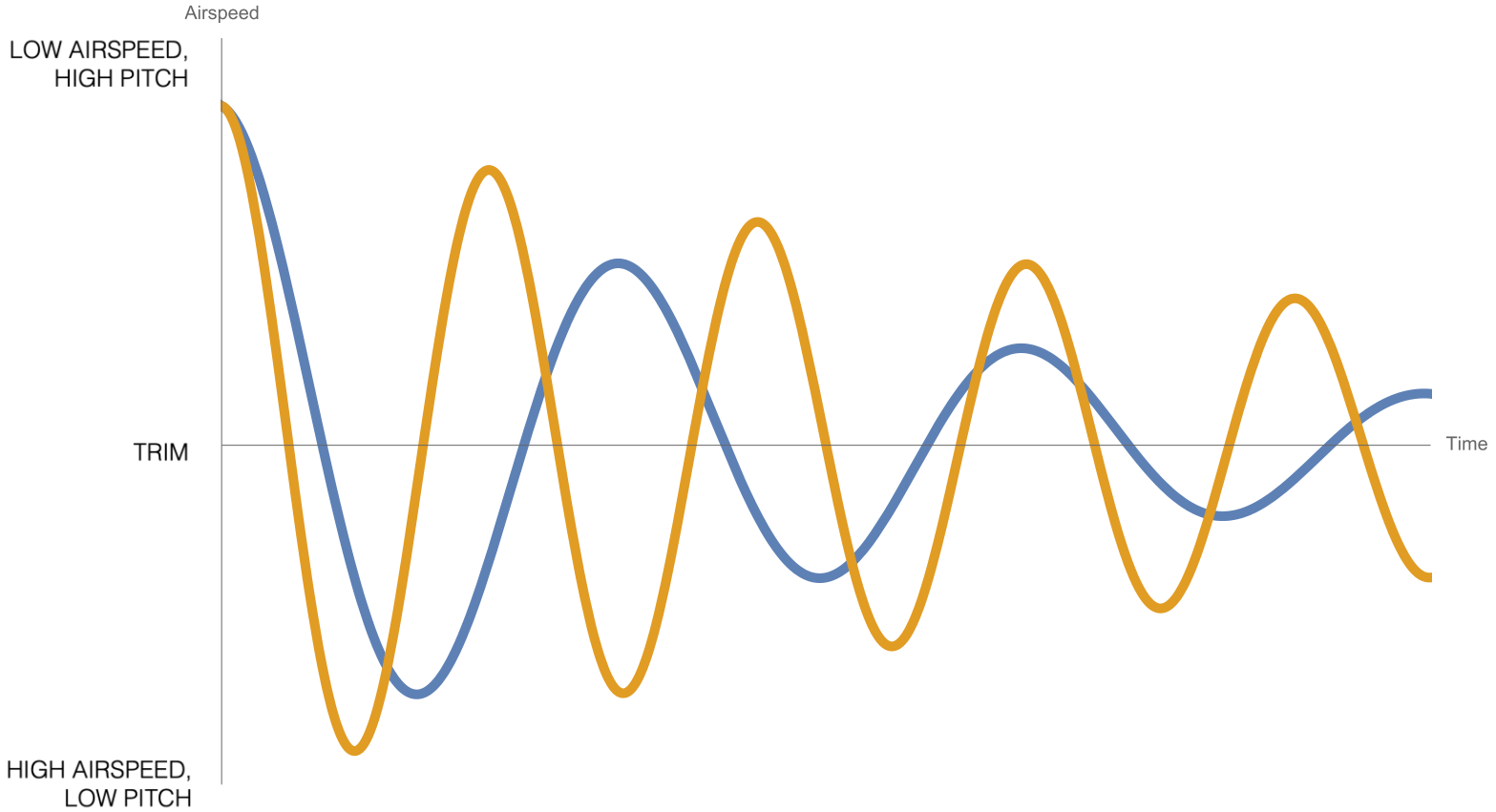
PIOS: PILOT OUT OF PHASE



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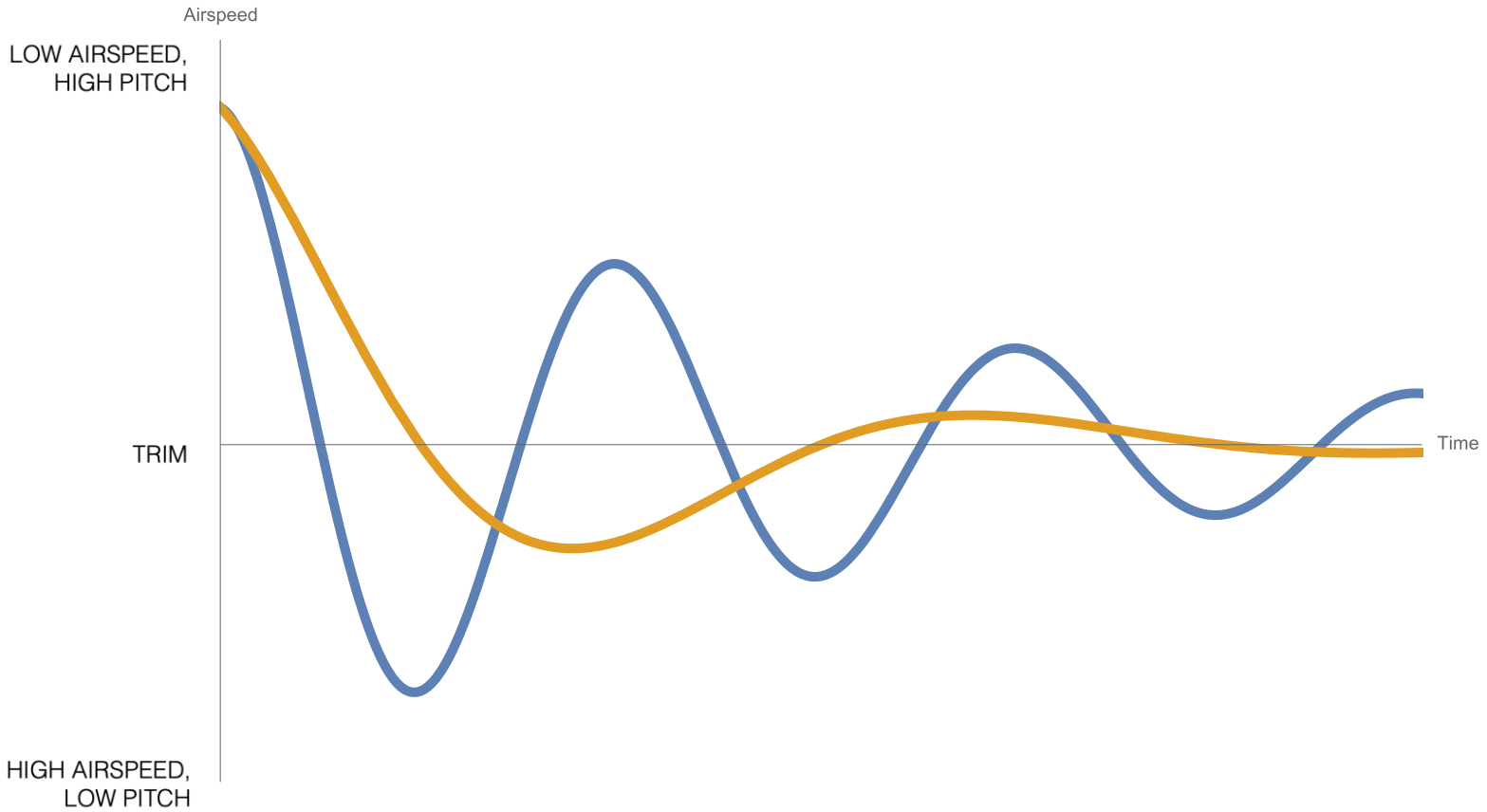

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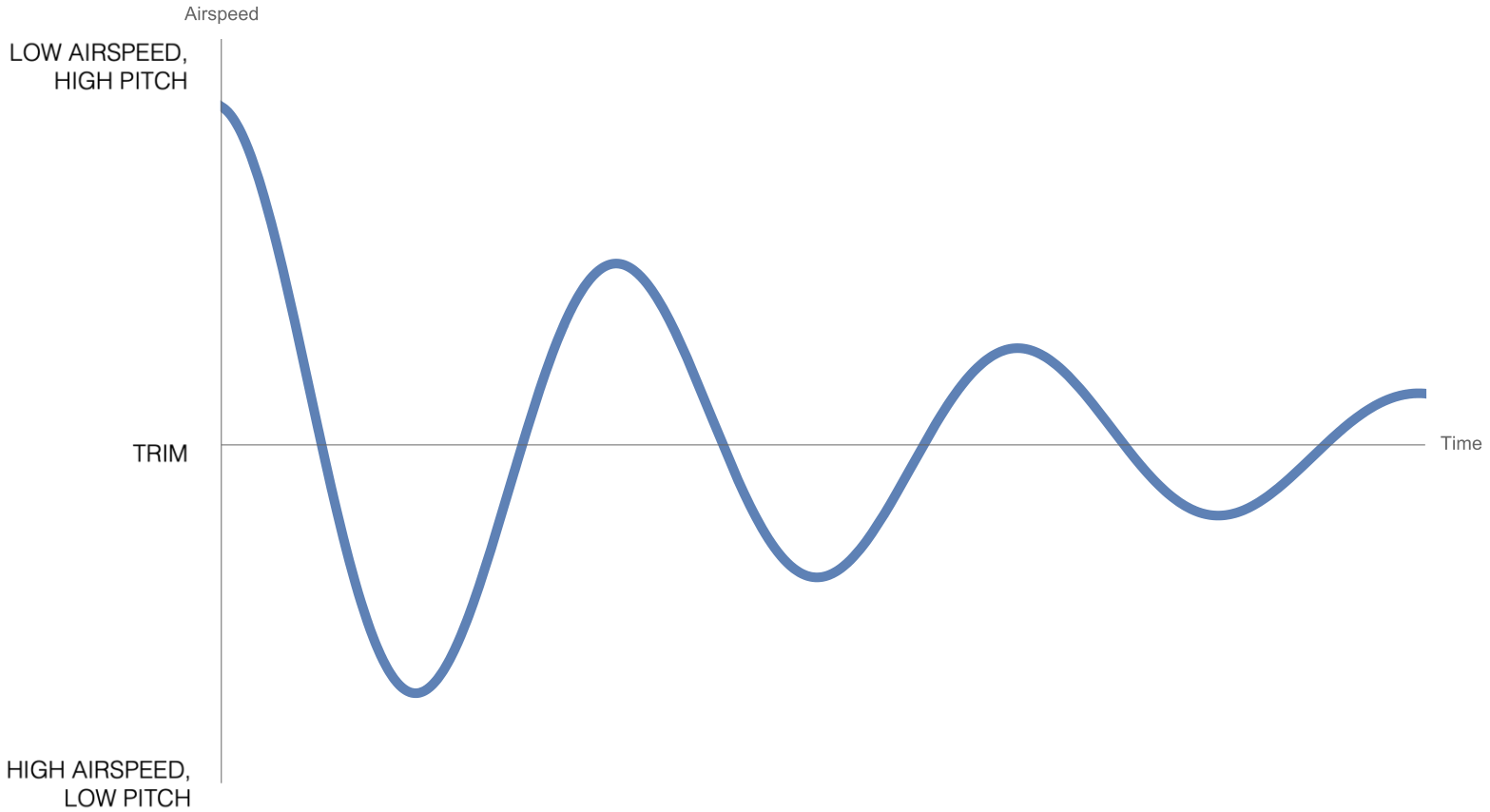

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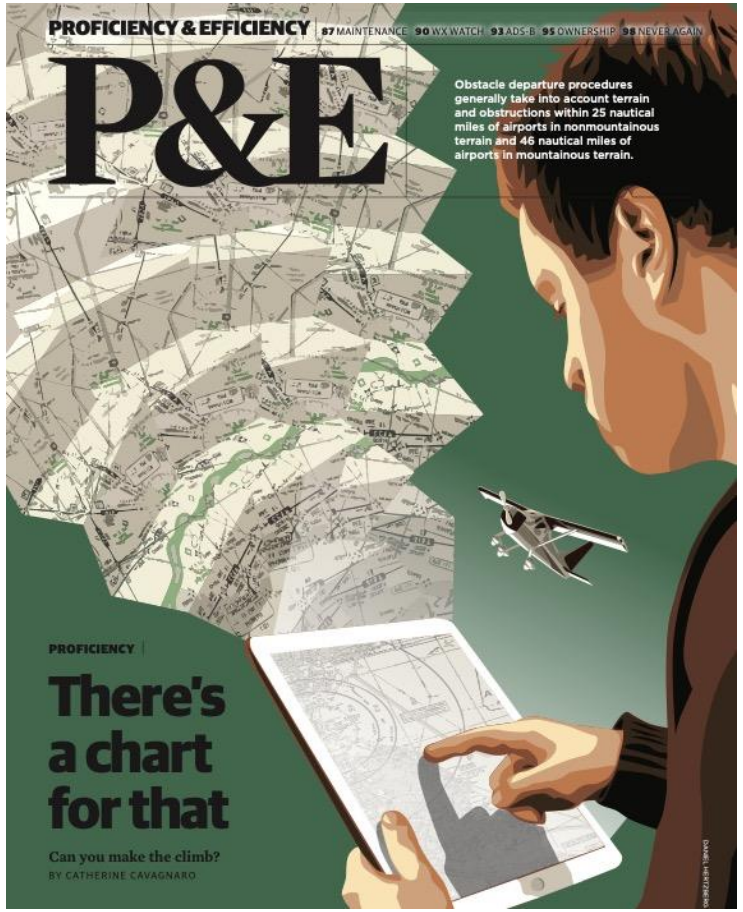
CLIMB/DESCENT PLANNING

STEAMBOAT SPRINGS, CO
STEAMBOAT SPRINGS/BOB ADAMS FIELD (SBS)
TAKEOFF MINIMUMS AND (OBSTACLE) DEPARTURE PROCEDURES
AMDT 2 30JAN20 (20030) (FAA)
TAKEOFF MINIMUMS:
Rwy 14, std. w/min. climb of 657' per NM to 8900 or 3700-3 for VCOA.
Rwy 32, std. w/min. climb of 519' per NM to 9600 or 3700-3 for VCOA.
DEPARTURE PROCEDURE:
Rwy 14, climbing right turn to 14000 on heading 220°, thence ...
Rwy 32, climb on heading 323° to 7500, then climbing left turn to 14000 direct BQZ VOR/DME, thence ...
... On BQZ R-172 to SBURG and hold, continue climb-in-hold to 14000 (hold south right turns, 352° inbound).
VCOA:
All runways, obtain ATC approval for VCOA when requesting IFR clearance. Climb in visual conditions to cross BQZ VOR/DME at or above 10400, continue climb to 14000 on BQZ R-172 to SBURG INT/BQZ 11.35 DME and hold, continue climb-in-hold to 14000 (hold south, right turns, 352° inbound).
TAKEOFF OBSTACLE NOTES:
Rwy 14, tree 171' from DER, 144' left of centerline, 6887' MSL.
Rwy 32, tree 1.6 NM from DER, 3107' right of centerline, 100' AGL/7169' MSL.
Trees beginning 1.7 NM from DER, 2988' right of centerline, up to 30' AGL/7219' MSL.



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CLIMB/DESCENT PLANNING

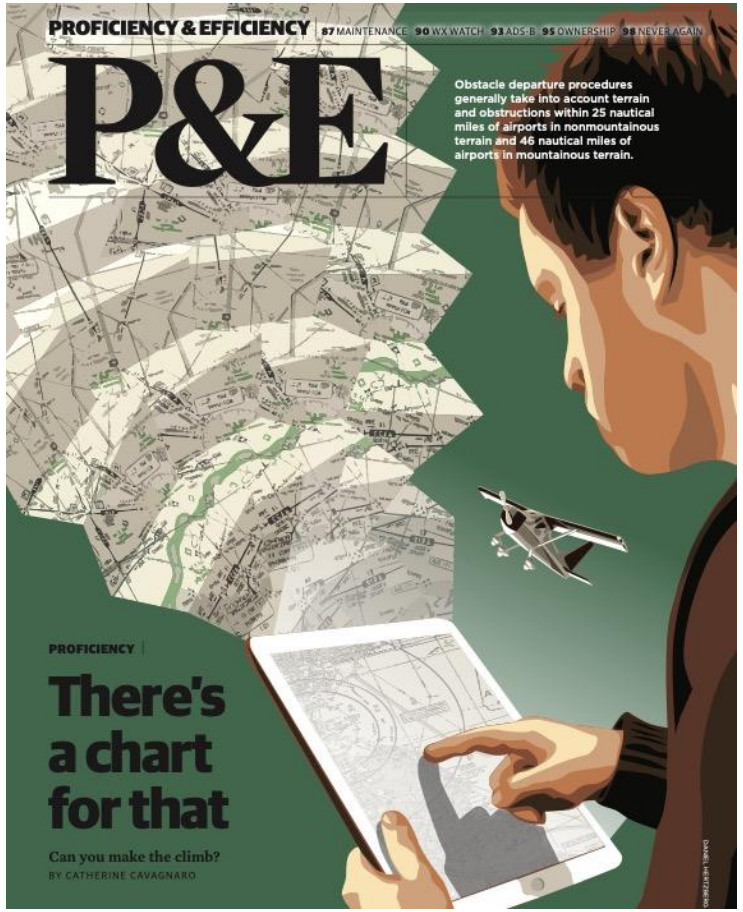
CLIMB/DESCENT TABLE 10042

INSTRUMENT TAKEOFF OR APPROACH PROCEDURE CHARTS
RATE OF CLIMB/DESCENT TABLE

(ft. per min)

A rate of climb/descent table is provided for use in planning and executing climbs or descents under known or approximate ground speed conditions. It will be especially useful for approaches when the localizer only is used for course guidance. A best speed, power, altitude combination can be programmed which will result in a stable glide rate and altitude favorable for executing a landing if minimums exist upon breakout. Care should always be exercised so that minimum descent altitude and missed approach point are not exceeded.

CLIMB/ DESCENT ANGLE (degrees and tenths)		ft/NM	GROUND SPEED (knots)										
			60	90	120	150	180	210	240	270	300	330	360
	2.0	210	210	320	425	530	635	743	850	955	1060	1165	1275
	2.5	265	265	400	530	665	795	930	1060	1195	1325	1460	1590
VERTICAL PATH ANGLE	2.7	287	287	430	574	717	860	1003	1147	1290	1433	1576	1720
	2.8	297	297	446	595	743	892	1041	1189	1338	1486	1635	1783
	2.9	308	308	462	616	770	924	1078	1232	1386	1539	1693	1847
	3.0	318	318	478	637	797	956	1115	1274	1433	1593	1752	1911
	3.1	329	329	494	659	823	988	1152	1317	1481	1646	1810	1975
	3.2	340	340	510	680	850	1020	1189	1359	1529	1699	1869	2039
	3.3	350	350	526	701	876	1052	1227	1402	1577	1752	1927	2103
	3.4	361	361	542	722	903	1083	1264	1444	1625	1805	1986	2166
	3.5	370	370	555	745	930	1115	1300	1485	1670	1860	2045	2230
	4.0	425	425	640	850	1065	1275	1490	1700	1915	2125	2340	2550
	4.5	480	480	715	955	1195	1435	1675	1915	2150	2390	2630	2870



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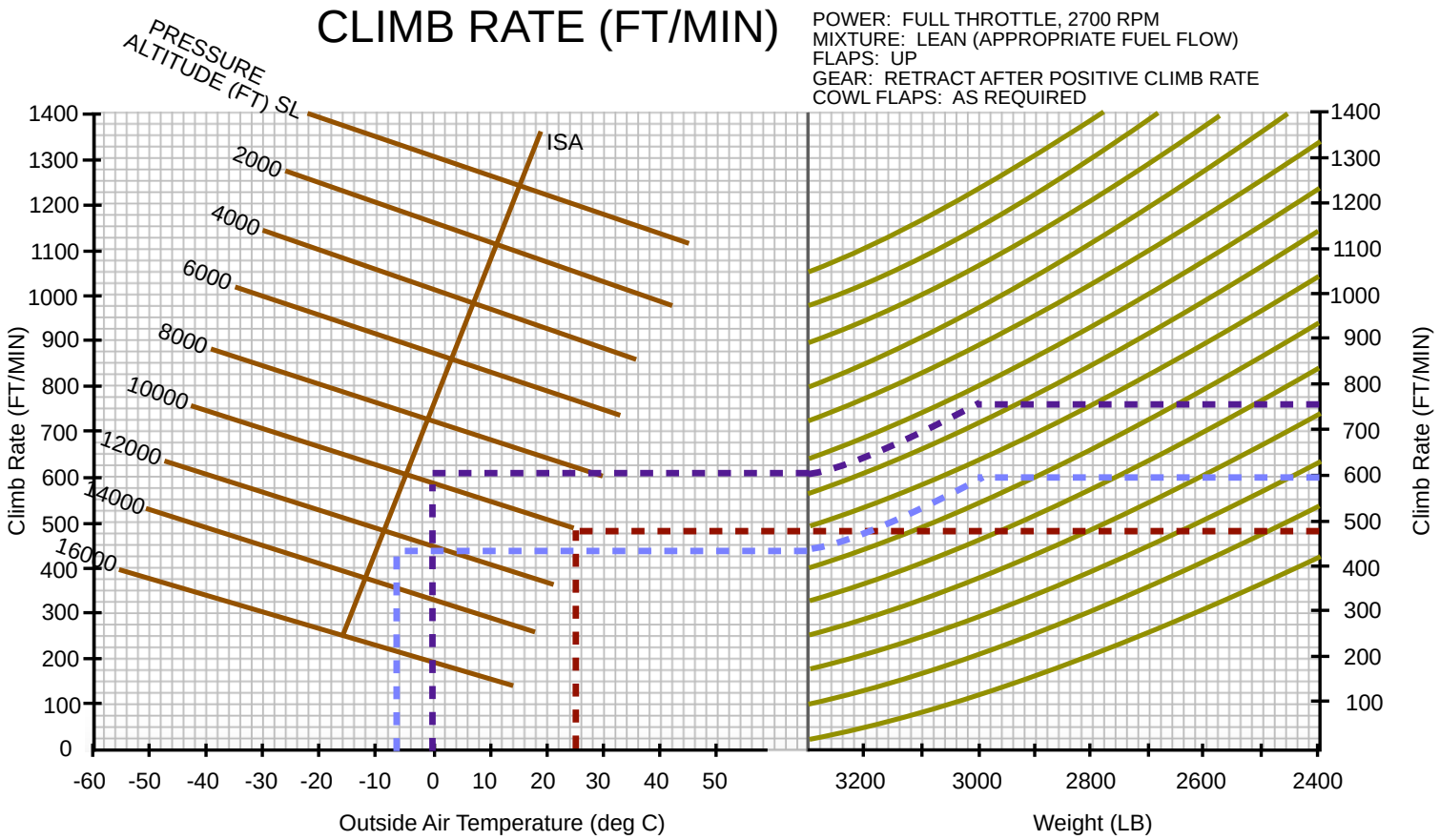
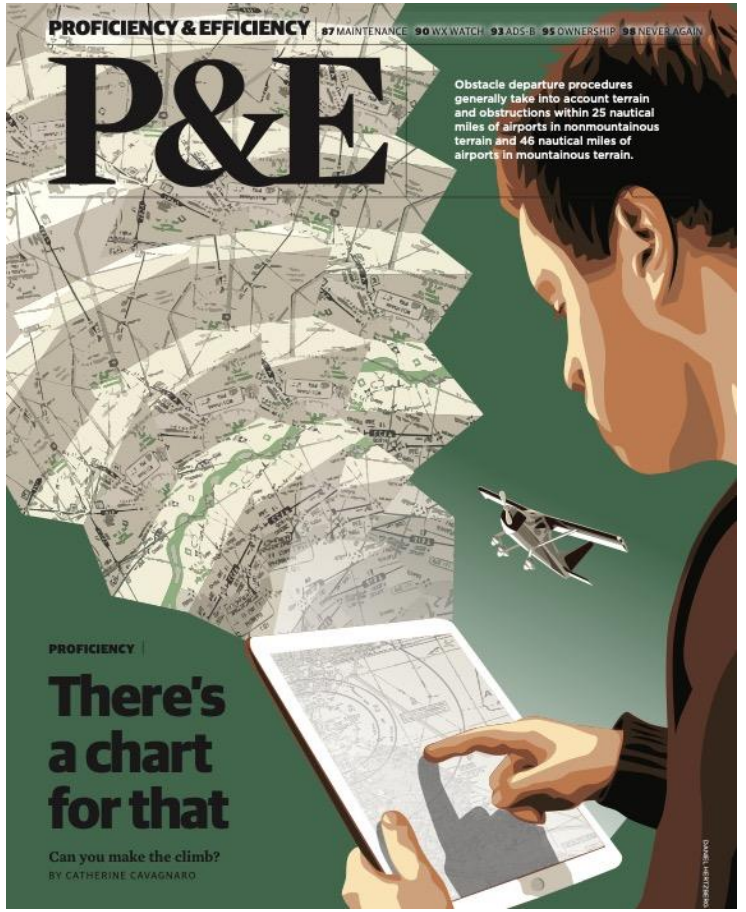
LIVE

CLIMB/DESCENT PLANNING





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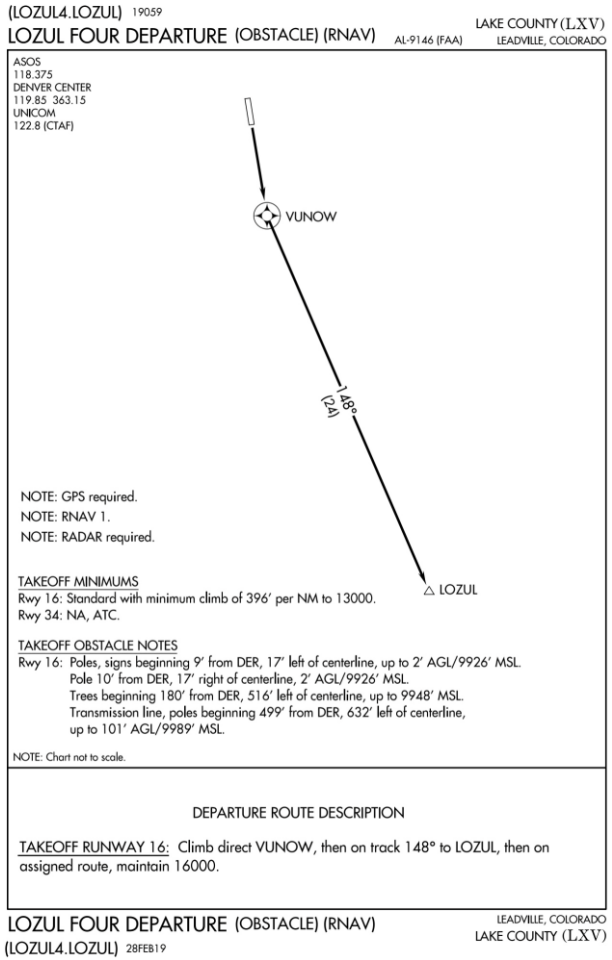


(LOZUL4.LOZUL) 19059
LOZUL FOUR DEPARTURE (OBSTACLE) (RNAV) AL-9146 (FAA)
LAKE COUNTY (LXV)
LEADVILLE, COLORADO

ASOS
118.375
DENVER CENTER
119.85 363.15
UNICOM
122.8 (CTAF)

VUNOW
148° (2A)
LOZUL

NOTE: GPS required.
NOTE: RNAV 1.
NOTE: RADAR required.

TAKEOFF MINIMUMS
Rwy 16: Standard with minimum climb of 396' per NM to 13000.
Rwy 34: NA, ATC.

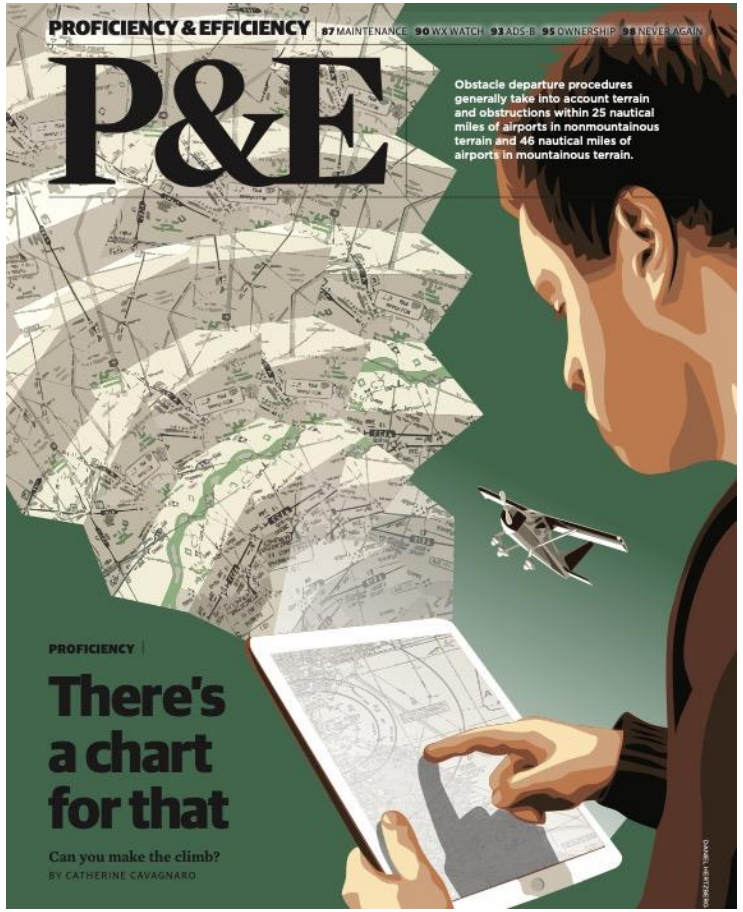
TAKEOFF OBSTACLE NOTES
Rwy 16: Poles, signs beginning 9' from DER, 17' left of centerline, up to 2' AGL/9926' MSL.
Pole 10' from DER, 17' right of centerline, 2' AGL/9926' MSL.
Trees beginning 180' from DER, 516' left of centerline, up to 9948' MSL.
Transmission line, poles beginning 499' from DER, 632' left of centerline, up to 101' AGL/9989' MSL.

NOTE: Chart not to scale.

DEPARTURE ROUTE DESCRIPTION

TAKEOFF RUNWAY 16: Climb direct VUNOW, then on track 148° to LOZUL, then on assigned route, maintain 16000.

LOZUL FOUR DEPARTURE (OBSTACLE) (RNAV)
(LOZUL4.LOZUL) 28FEB19
LEADVILLE, COLORADO
LAKE COUNTY (LXV)



LIVE

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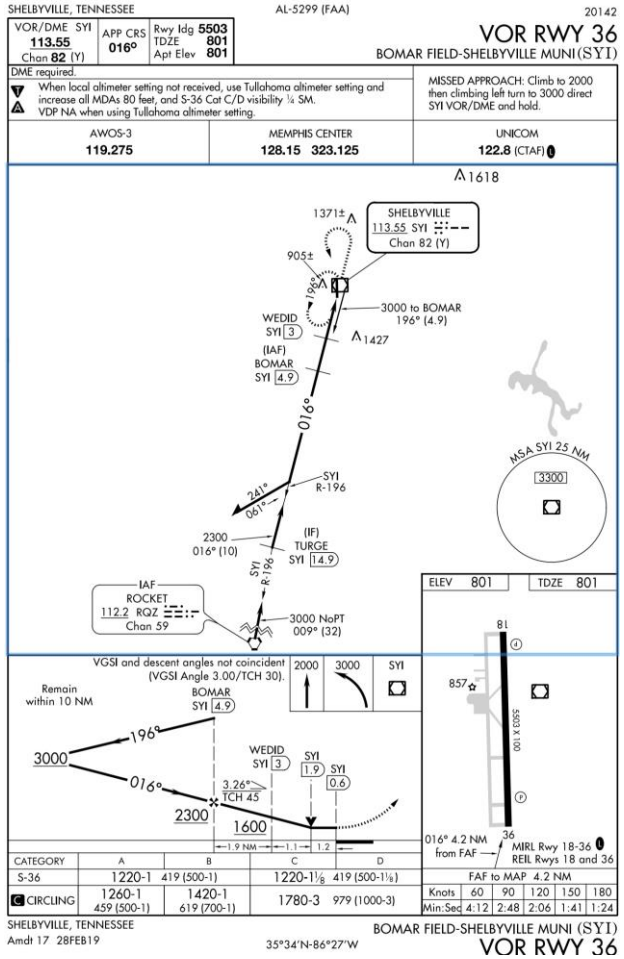
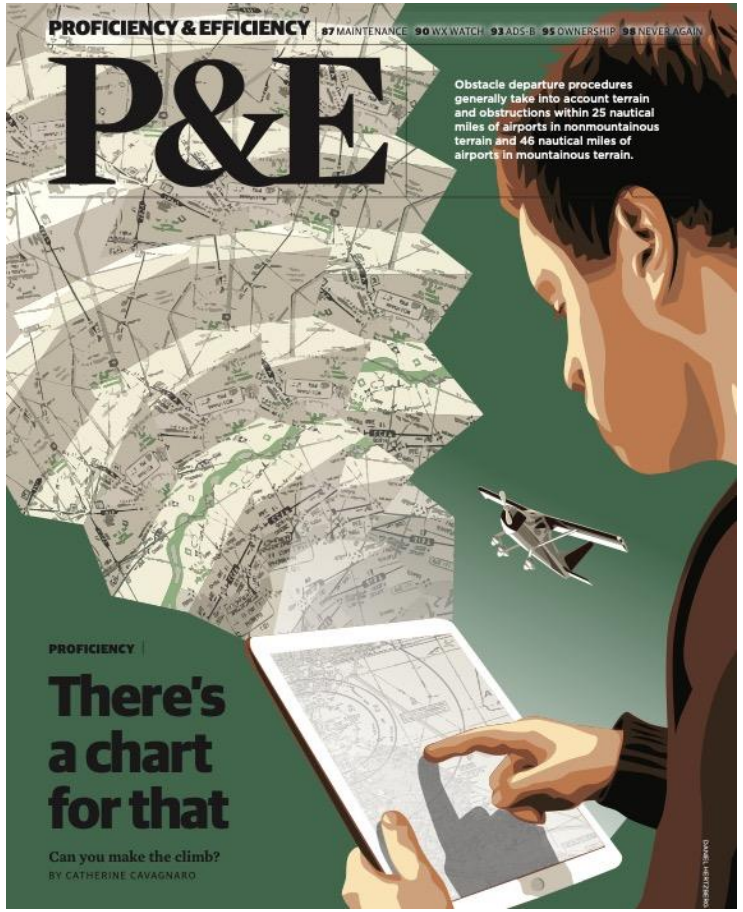
CLIMB/DESCENT PLANNING





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SLIPPING AND SKIDDING STALLS

SLIP

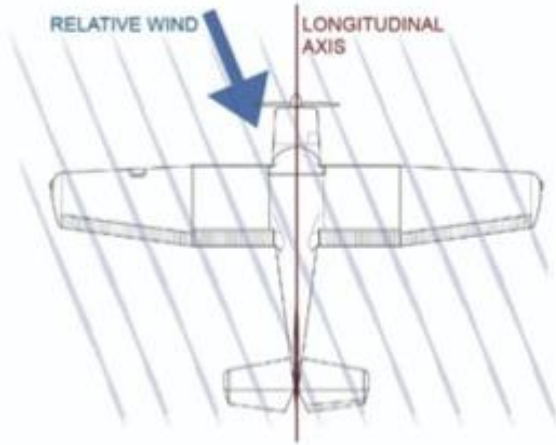
SKID

LIVE

Taming the stall

Slips, skids, and centering the ball

BY CATHERINE CAVAGNARO



UNCOORDINATED FLIGHT OCCURS when the relative wind is not aligned with the longitudinal axis (as seen from above).

"I WAS CHECKING OUT IN THE CLUB'S Piper Cherokee and whenever we stalled, the left wing dropped and it scared me. What happened?" As a flight instructor who specializes in spin training, I am often contacted with questions such as this. I have learned that what pilots fear most about a the inclinometer inside the turn coordinator usually does the job. For coordinated flight, keep the ball centered.

While turning stalls might induce greater anxiety than those in level flight, there is no good reason for that as long as the flight stays coordinated. A banked turn with insufficient

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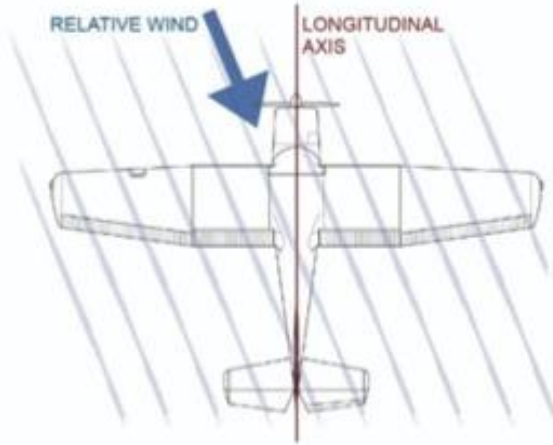

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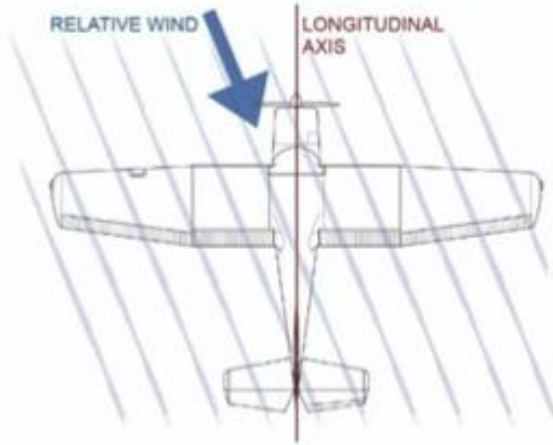

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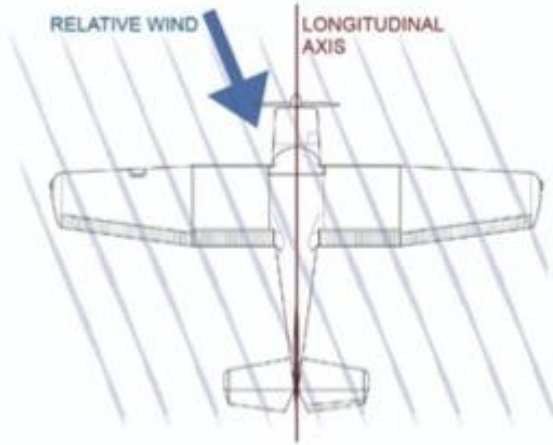

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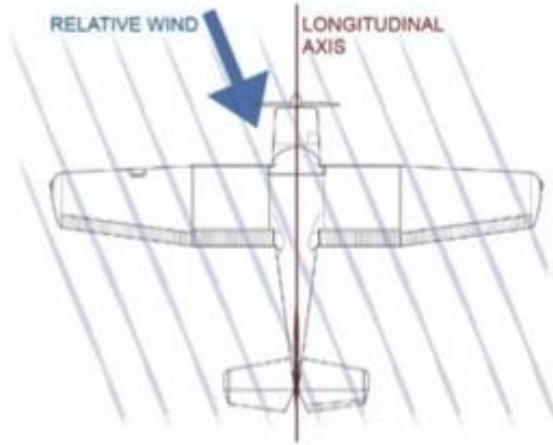

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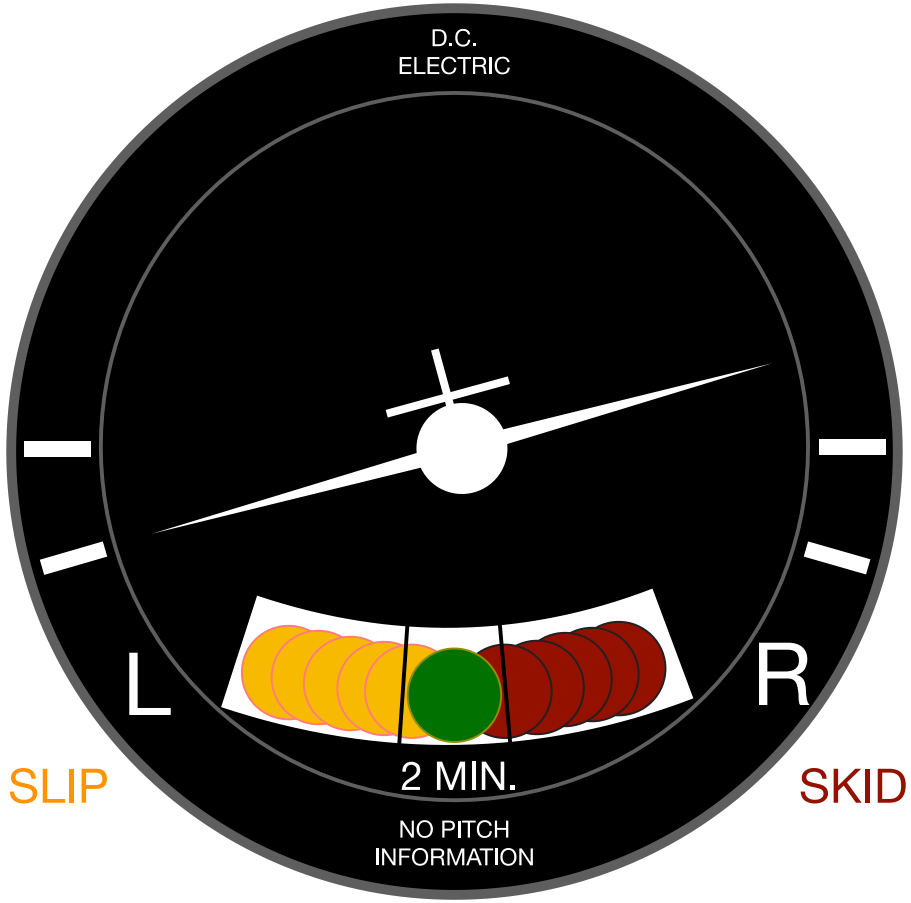

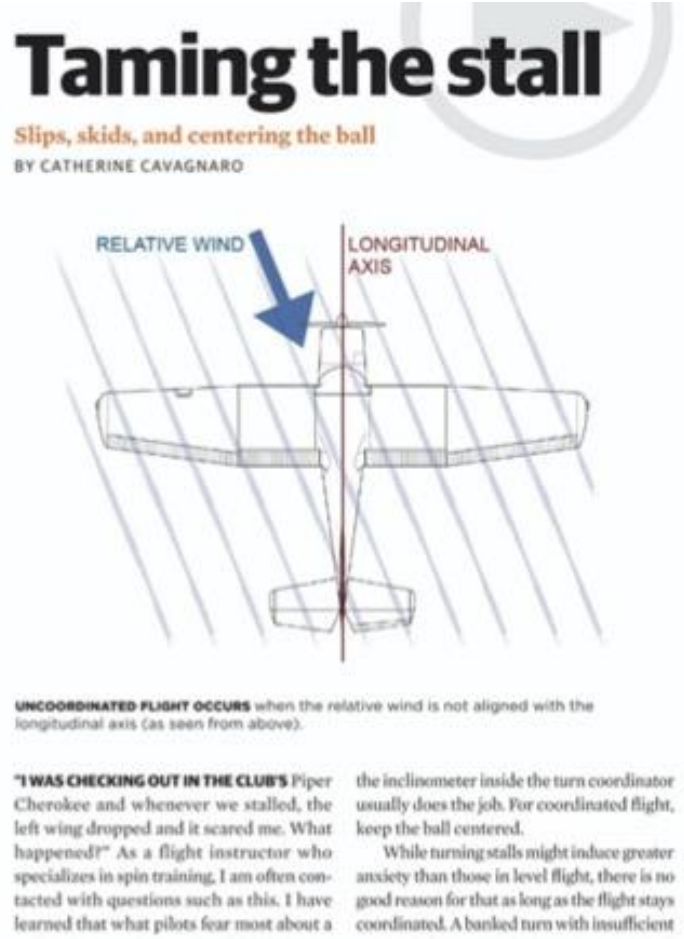

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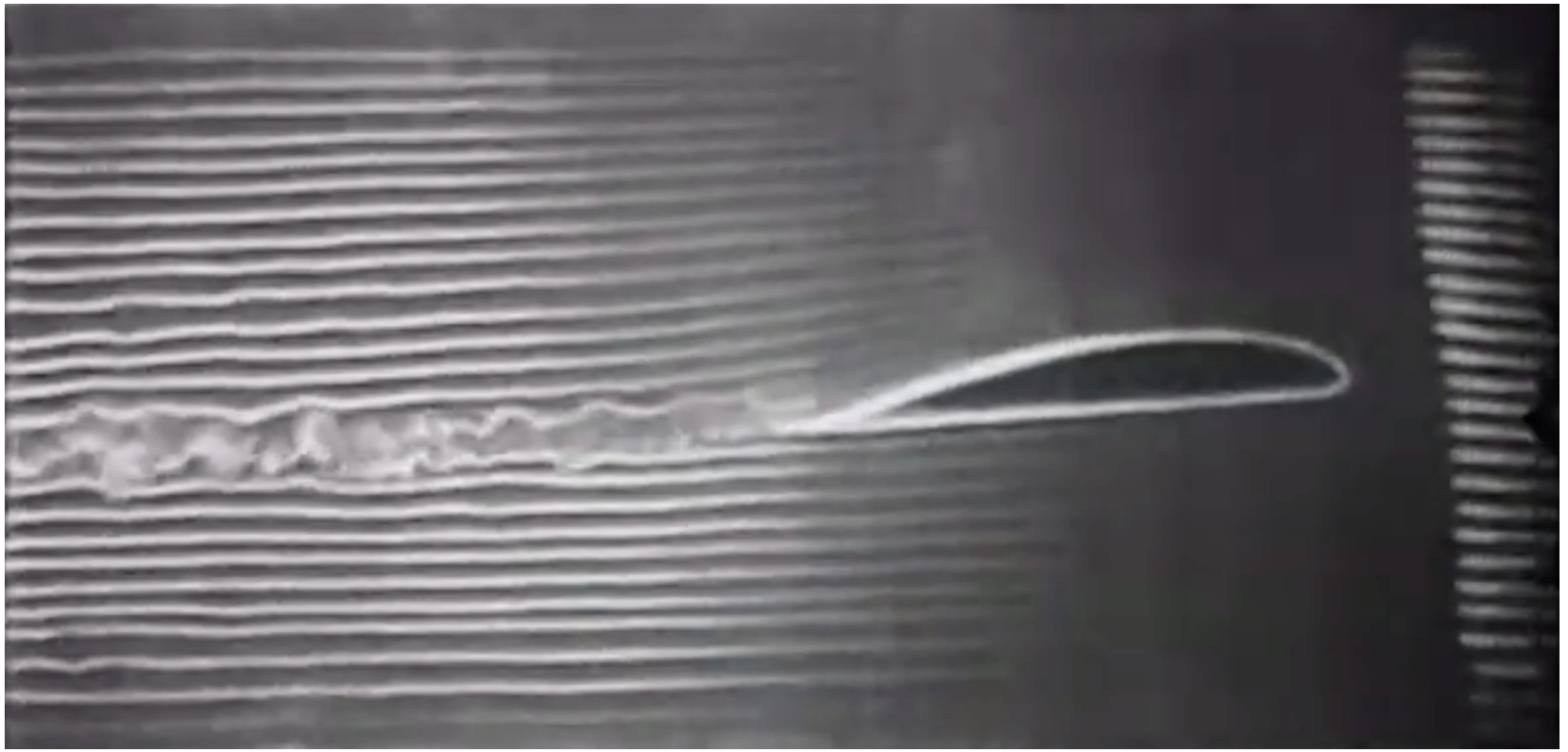

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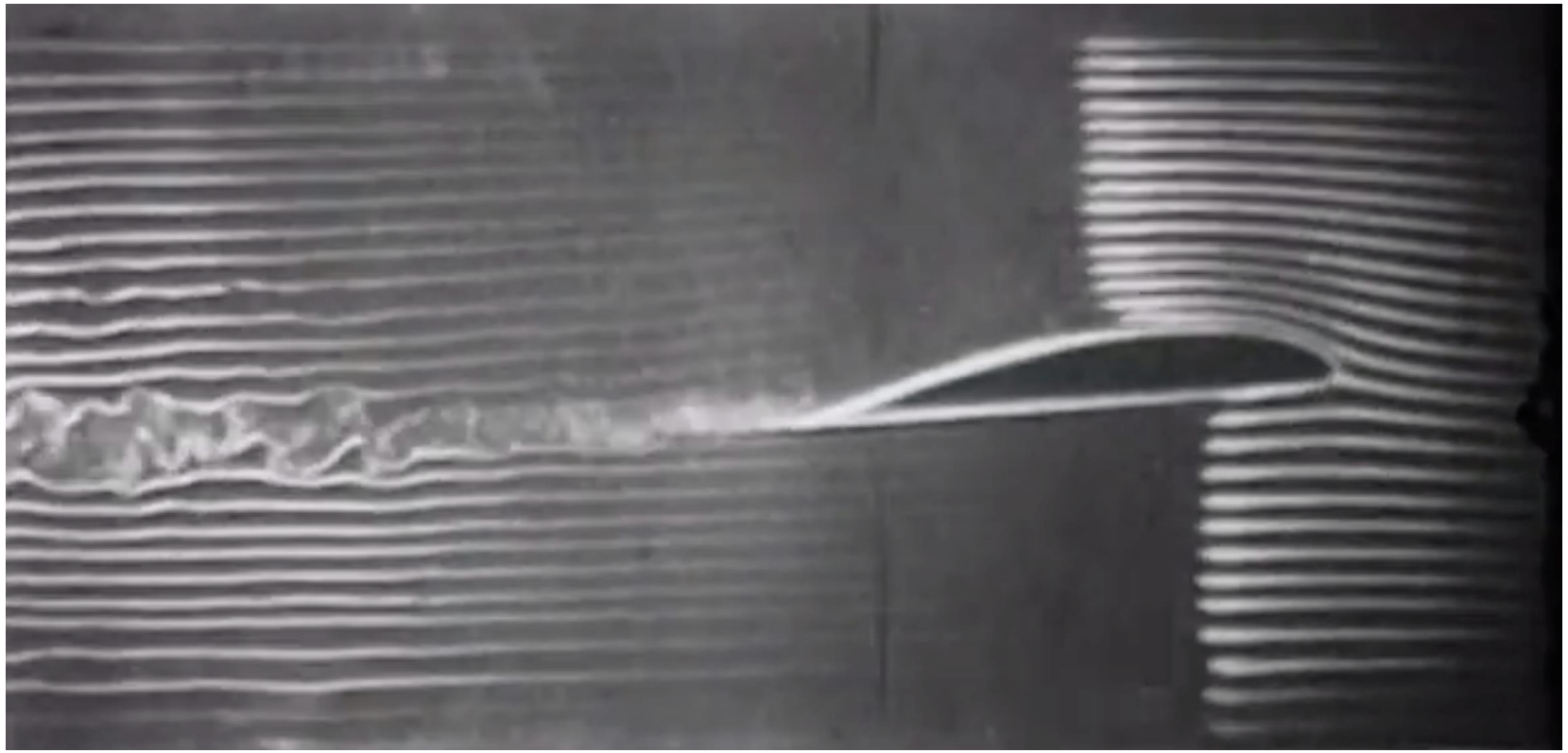
AERODYNAMICS



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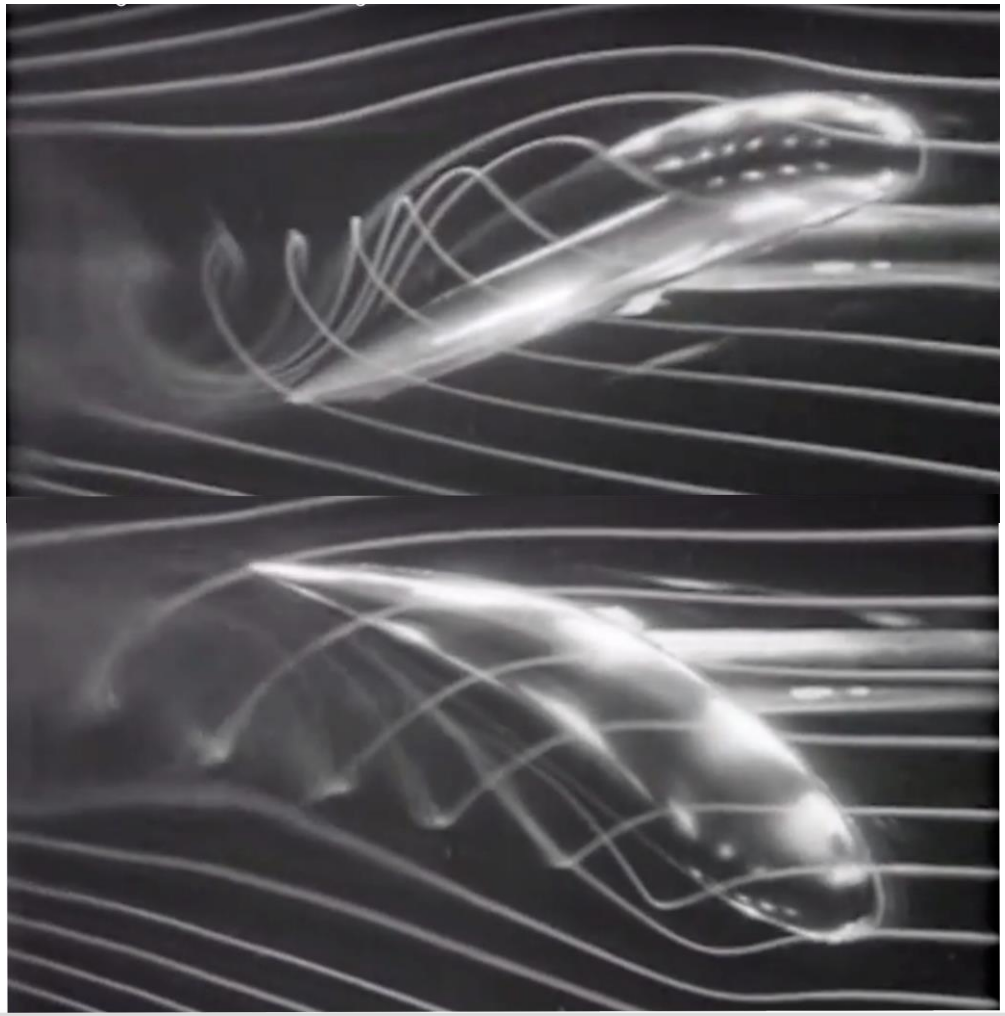

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LIVE

SECRET OF FLIGHT DOESN'T NEED TO BE

https://www.youtube.com/watch?v=V1oCDR3DBbo

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LIVE

BEYOND THE ACS

BRAKE CHECK
FLIGHT CONTROLS—FREE AND CORRECT
MAGNETO CHECK
APPLYING THROTTLE ON TAKEOFF
INCREASE PROPELLER RPM BEFORE LANDING
CROSSWIND LANDING TECHNIQUE
SLOWING AFTER LANDING

Like a pro

Commercial training beyond the ACS

BY CATHERINE CAVAGNARO

CONTINUING EDUCATION is important in all my pursuits so, after I earned my instrument rating, I decided to move my flying to the next level by going for a commercial certificate. All my training to date had been in a Cessna 150 and Piper Cherokee 140, pressure, put the landing gear handle in the down position, and left my hand there until I saw three green lights that ensured the gear configuration was safe for landing. Abeam the middle of the runway, I pushed the propeller lever forward, heard

AOPA *Pilot Magazine*, December 2019

FLARING/DIRECTIONAL CONTROL

PROFICIENCY & EFFICIENCY | 86 WX WATCH 89 MAINTENANCE 93 PROFICIENCY 96 NEVER AGAIN

P&E

The *Airplane Flying Handbook* defines the flare as "a slow, smooth transition from a normal approach attitude to a landing attitude, gradually rounding out the flight path to one that is parallel with, and within a very few inches above, the runway."

Flare is not a four-letter word

And other lessons from the front porch

BY CATHERINE CAVAGNARO

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AS WE WATCHED THE CESSNA 172 landing at the Franklin County Airport in Sewanee, Tennessee, I heard, "C'mon, get that nose up!" next to me on the porch of the FBO. After all three tires touched at once, the nose of the aircraft pitched down as the pilot used heavy braking in order to stop before the end of the runway. The instructor and student taxied to the ramp, parked the Cessna, and walked toward us. They sure looked like they could use a break.

That afternoon, I'd felt the same way after teaching my classes at the university, so I headed out to the airport to sit and relax as had become my custom. The front porch holds a special place in the tradition of Southern hospitality and the Sewanee airport has one of the best. I could count on plenty of iced tea in the fridge, and a lawn chair with a front-row seat to the runway where students were perfecting their pattern work. It was a favorite venue for William "Bill" Kershner, the late aviation author and aerobatics instructor, who was there that afternoon to join in the friendship and laughter with local aviation enthusiasts. Whether he was teaching about aircraft stability and control or regaling us with his adventures landing the Vought F4U Corsair on aircraft carriers in the Pacific Ocean, Bill proved that education and fun are not mutually exclusive.

Bill invited the instructor, Pat, and his student Rosie to join us on the porch. After a sip of his tea Pat sighed, "That was some crosswind! Is landing at Sewanee always such a challenge?" We laughed and confessed that the conditions keep us on our toes, too. Bill explained that while it's smart to add a few knots extra for the gusty crosswinds, it looked as if they had added more than necessary and, with a touchdown far above stall speed, they paid the price with a long ground roll.

"That's not surprising, nor is it a problem," Bill said. "You're just looking in the wrong place."

Bill advised reducing the approach airspeed and getting the nose higher in the flare. Rosie said she was having trouble controlling the drift caused by the crosswind and, with a lower nose, she could still see the far end of the runway. Pat said, "Mr. Kershner, I'm a new instructor and I sure would like your advice here." Bill motioned us all toward the Cessna on the ramp and we eagerly followed.

Bill asked Rosie to sit in the airplane and right away identified a problem. In the older 172s without vertically adjustable seats, Rosie could barely see over the glareshield even with a level attitude. We borrowed a pillow from the FBO couch and fixed that problem. Bill then told Pat to push down on the rear empennage until the tiedown ring was a few inches above the ground to show Rosie the proper sight picture at the end of the flare. Rosie tried to peer over the nose but couldn't see the ramp in front of her. Bill assured her, "That's not surprising, nor is it a problem. You're just looking in the wrong place." Bill stood about 20 feet away from the pilot's side and slightly ahead of the aircraft and said, "You should be transitioning to look over here once the nose obstructs your view of the runway ahead. Keeping a constant distance to the edge of the runway will ensure you maintain directional control."

He showed me that five minutes on the ground can solve myriad problems in the air. No wonder he was named the 1992 National Certificated Flight Instructor of the Year. As a new instructor myself, I learned a lot by watching a master in action.

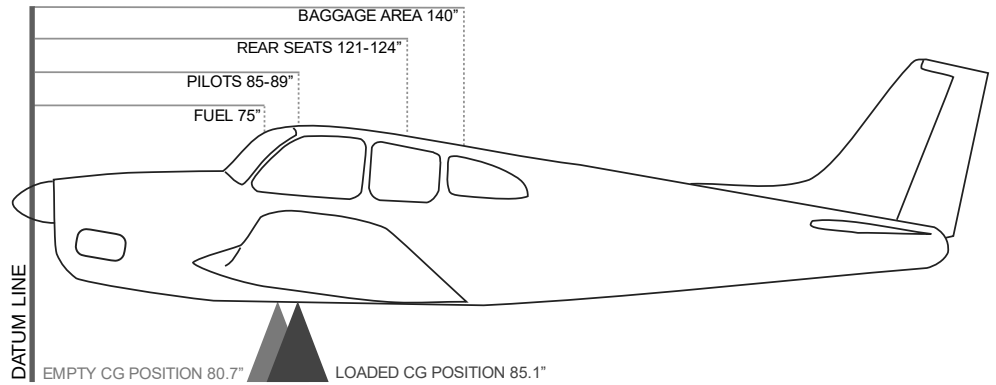
I'm now an FAA designated examiner, and I have seen many candidates land flat or lose directional control while staring straight ahead at nothing but blue sky on takeoff or landing. The soft-field procedures require such an attitude and, when combined with a crosswind, using a correct visual reference is imperative. With enough of a deviation and the safety of flight at risk, I need to assume the controls. Of course, that never means a happy end to the practical exam.

LIVE

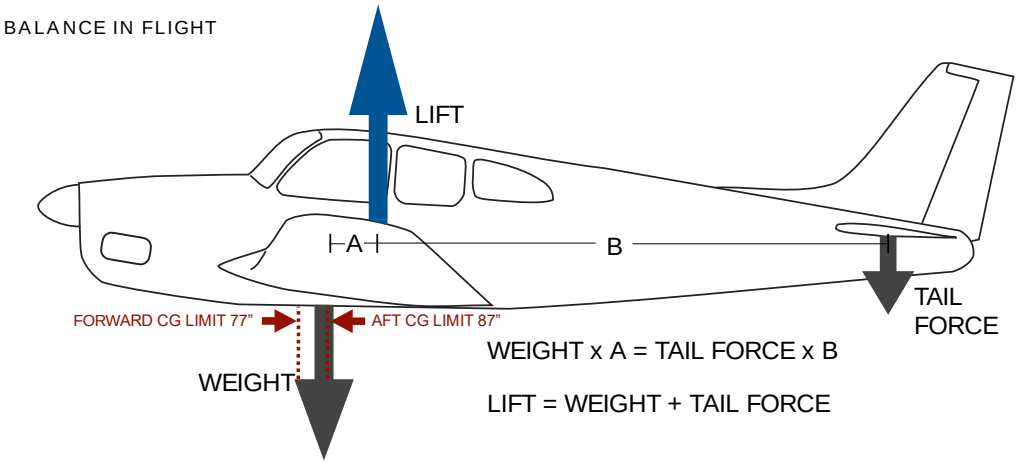
AOPA *Pilot Magazine*, June 2020

WEIGHT AND BALANCE

CALCULATING THE MOMENT



BALANCE IN FLIGHT



WEIGHT x A = TAIL FORCE x B

LIFT = WEIGHT + TAIL FORCE

LIVE

New airplane, new W&B

Check that center of gravity

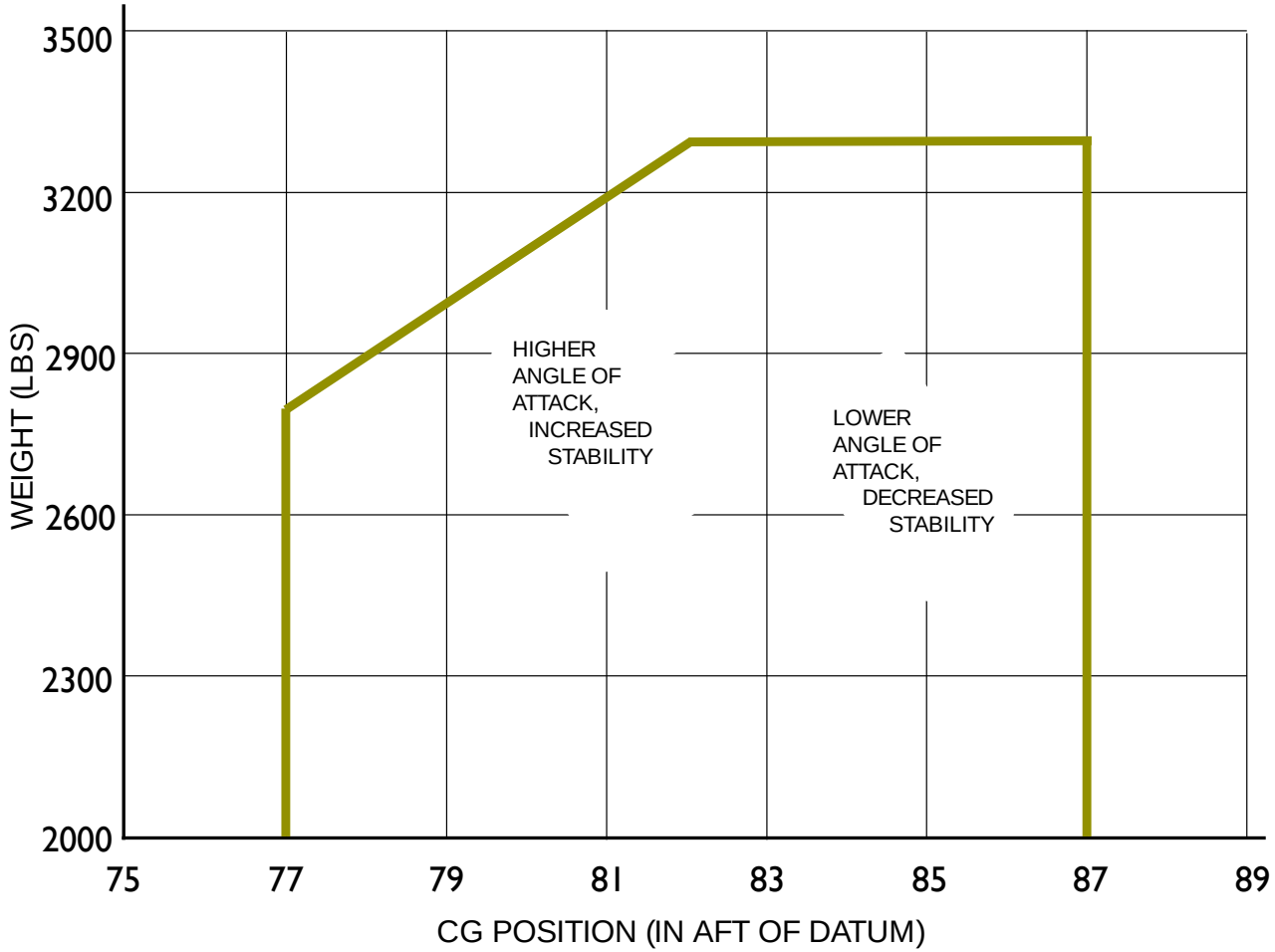
BY CATHERINE CAVAGNARO

THE AEROBATIC Beechcraft Bonanza *Niky* was a perfect fit for Catherine Cavagnaro and her family—once Cavagnaro made an avionics upgrade that changed the weight and balance and made more of the useful load available.

DURING THE ALMOST 20 YEARS we owned *Sally*, our Piper Cherokee 160, she escorted my family all over the country and even to the Bahamas. But while my sons Jack and Pete continued to grow, her useful load didn't, and each year packing for our adventures to pack what we wanted, and the 160-knot cruise speed would put more of the country in easy reach. I heard that Beechcraft certified a version of the Bonanza in the acrobatic category that would let me play upside down. During a phone chat with

AOPA *Pilot Magazine*, August 2020

WEIGHT AND BALANCE



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Beyond the ACS: Tips for Better Instruction

by Catherine Cavagnaro, *CFI-I, ATP, PhD*

Thank you for participating!

LIVE

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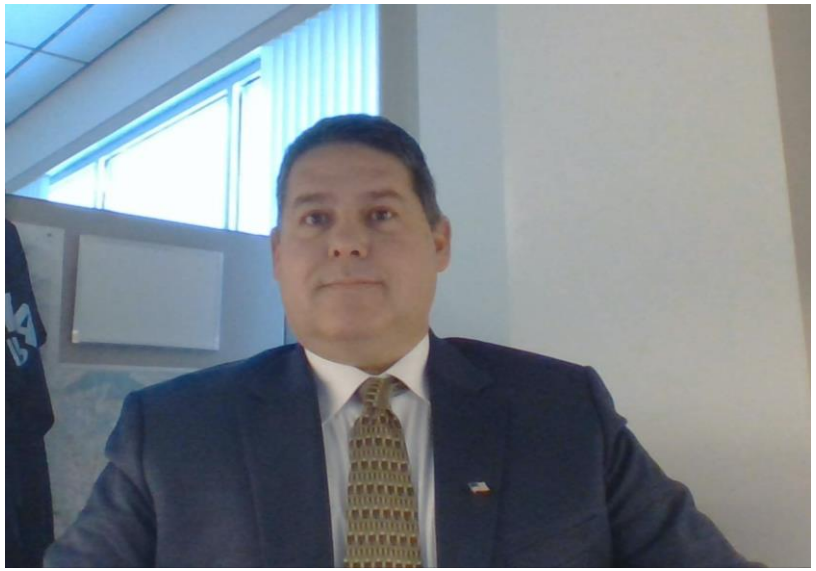
Save the Date!

Join us for next month's MentorLIVE, February 17th at 8:00 p.m. ET



"TSA Flight Training Provider Overview"

Presented by Don L. Stacy
FAA Transportation Security Inspector-Wisconsin

LIVE

Thanks for Watching!

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