2022 CCA SAFETY REPORT AND CALLBACK

Special dedication and thank you to the CCA Safety Team members

2022 BY THE NUMBERS

0 ACCIDENTS	**8,400** TAKEOFFS AND LANDINGS
2,500 HOURS FLOWN	**12** AIRCRAFT
320 PILOTS	**2,000** FLIGHTS

VSOAR DATA & TRENDS

2022 was the first full year Chester County Aviation (CCA) utilized a Safety Management System (SMS) to ensure the safe operation of each flight. The SMS approach is becoming a standard in the aviation industry as it is all about safety-decision making at an organizational level. It is the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls. Apart from the SMS is “Voluntary Safety Occurrence/Accident Report” or VSOAR, where our pilots are encouraged to report safety items. Any Pilot, Passenger, or Observer can file a VSOAR report completely anonymously at any time.

As a pilot, it is our job to report unsafe activity within all phases of flight including preflight, taxi, takeoff, landing, & post-flight.

Report data indicates a strong trend of issues during the positioning of aircraft on the ground. Most reports are related to placing aircraft in improper parking spots in the hangar or on the ramp, where they lead to potential damage.

Low Altitude Operations

We all are aware of the risk when operating at a low altitude. Our instructors couldn’t seem to remind us enough the low-altitude maneuvering is a major cause of accidents. VSOAR safety data show multiple reports of low altitude maneuvering-related issues (<1,000’ AGL).

The first area to consider is operating while in the local traffic pattern. We may want to believe that being at a towered airport can help this, but the towered airport has just an as high possibility as non-towered airports to have a mishap. For example, a slow-speed aircraft is departing the runway while a high-performance aircraft is performing a go-around. If the high-performance aircraft doesn't offset for the departing traffic, a potential mid-air collision is a possibility. The Federal Aviation Administration (FAA) makes many suggestions to operate safely in the traffic pattern which can be found in the Airplane Flying Handbook.

Follow the recommendations of the FAA and enter on a 45° entry to the downwind all the time, every time. Avoid straight-in approaches when completely necessary.

Another time to consider the risks of low altitude maneuvering is 14 CFR § 91.119 – Minimum Safe Altitudes. No matter where you are you must be at an altitude allowing if a power unit fails, an emergency landing without undue hazard to persons or property on the surface. If you are over any congested area of a city, town, or settlement, or any open-air assembly of persons, you must be at an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. If you are over any area that is not congested – you must be at an altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. None of this applies if you are intended to take off or land. This is the law on operating on how low we can go.

Another time this can become a concern is overwater flights. We can easily have this issue with the Chesapeake and Delaware bay crossings. CCA SOPM says No pilot-in-command shall fly outside of the airplane's gliding range from land unless each occupant has a suitable flotation device in the airplane (REV 03 5.44). Unless you want to be going for an unexpected swim, you are required by CCA to calculate gliding rang and stay a safe distance from shore.

We must always consider 14 CFR § 91.13 Careless and Reckless operation. "Hot Dogging" down low to impress friends or family, flying lower to get a better view, or doing a circle around a house never lead to a good outcome.

The deadliest phrase in aviation: "Hey, watch this."

DID YOU KNOW?

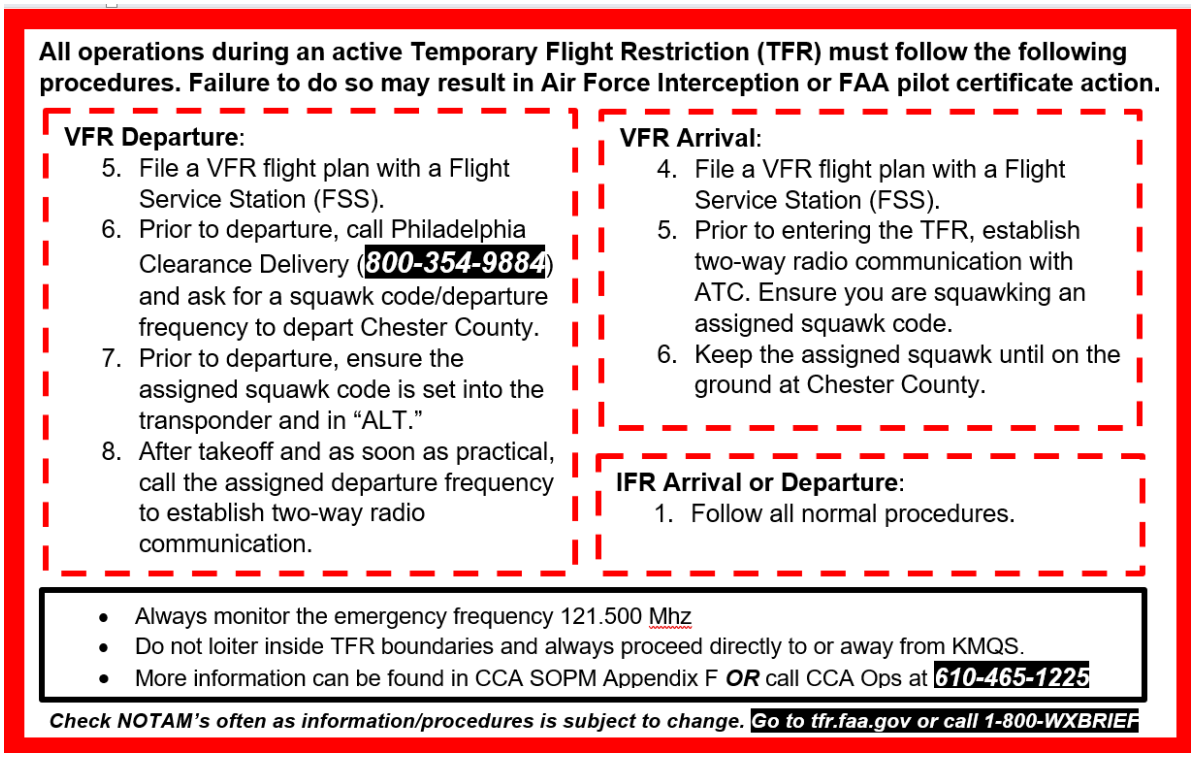
Often safety related incidents occur on clear VFR days with good visibility. 85% of VOSAR reports for 2022, occurred in day VFR conditions with visibility greater than 10 NM. We often associate high risk situations with low weather and possibly nighttime conditions, but this just is not always true.

VIP TFR Operations

We all are inconvenienced by the VIP TFR that often shows up over Wilmington, DE, or Philadelphia, PA. We all must still follow proper protocol and take the extra steps to verify what we are doing is correct each time.

VSOAR data has shown a lack of attention to detail when operating inside the TFR. If a TFR is present, follow the NOTAMs provisions. CCA's SOPM offers detailed guidance on how to properly depart and arrive under VFR/IFR during an active TFR. Getting a phone call from the FAA can be easily avoided by following the NOTAM, CCA SOPM, and the word of our trusted instructors. If you are unsure about a particular situation, procedure, or policy – Ask. The CCA staff is always willing to help you all the time. Below is a helpful guide to being successful while operating inside the TFR.

If you do make a mistake, call ATC on 121.500 Mhz and land as soon as practical. Once on the ground and safe, file a VSOAR report.



All operations during an active Temporary Flight Restriction (TFR) must follow the following procedures. Failure to do so may result in Air Force Interception or FAA pilot certificate action.

VFR Departure:

5. File a VFR flight plan with a Flight Service Station (FSS).
6. Prior to departure, call Philadelphia Clearance Delivery (***800-354-9884***) and ask for a squawk code/departure frequency to depart Chester County.
7. Prior to departure, ensure the assigned squawk code is set into the transponder and in "ALT."
8. After takeoff and as soon as practical, call the assigned departure frequency to establish two-way radio communication.

VFR Arrival:

4. File a VFR flight plan with a Flight Service Station (FSS).
5. Prior to entering the TFR, establish two-way radio communication with ATC. Ensure you are squawking an assigned squawk code.
6. Keep the assigned squawk until on the ground at Chester County.

IFR Arrival or Departure:

1. Follow all normal procedures.

- Always monitor the emergency frequency 121.500 Mhz
- Do not loiter inside TFR boundaries and always proceed directly to or away from KMQS.
- More information can be found in CCA SOPM Appendix F ***OR*** call CCA Ops at ***610-465-1225***

Check NOTAM's often as information/procedures is subject to change. Go to tfr.faa.gov or call 1-800-WXBRIEF

CCA Safety Reporting Culture

The safety teams want all our pilot to know we care about safety, and it is our #1 responsibility and priority. We would rather you file a report than no file one at all.

If you see something, say something. VSOAR reports are entirely anonymous.

If you are unsure about VSOAR or SMS, consider the following Hypothetical scenario by the FAA:

A well-designed aircraft with a history of reliable service is being prepared for a charter flight. Employees tow the aircraft from the hangar to the terminal. One employee sees wetness on the right tire as he unhooks the tow bar. However, he does not give it attention, as he is very busy and has three other aircraft to move in the next 15 minutes.

At the same time, a safety inspector is walking through the hangar when she encounters a hydraulic oil spill on the hangar floor. She notifies a janitor to clean up the slip hazard as she leaves. While cleaning the spill, the janitor wonders aloud where the spill came from. Afterwards, both the inspector and the janitor continue with their respective jobs.

Meanwhile, the Chief Pilot assigns the charter flight to a new pilot with the company. While new to the company, the pilot is well trained and prepared for the flight. He is also eager to do a good job and to impress the chief pilot. The chief tells him that the passengers and the aircraft are waiting at the terminal, and the new pilot has to get over there right away to keep the clients happy and on schedule.

The flight requires a little more fuel, so a fuel truck is called. While the aircraft is being filled, the fueler notices a small puddle of reddish fluid under the right main landing gear. He sees the pilot walking out to the aircraft, but before he can say anything, his supervisor calls and tells him to get right over to another aircraft. Recently, the fueler was criticized by his supervisor for taking too long to finish his work, so he quickly jumps in his truck and drives off to the next job without saying anything to the pilot.

The pilot, wanting to make a good impression on his passengers and the chief pilot, personally escorts them to the aircraft and begins his preparation for the flight. One passenger asks him a brief question as he is on the right side of the aircraft. In a moment of distraction, he does not bend down to inspect the right hand main landing gear.

During taxi, the pilot feels the aircraft is taking the bumps a little hard, but continues to the runway for take-off. Meanwhile, up in the tower, an air traffic controller, who happens to like this particular model of aircraft, picks up her binoculars to take a look at the taxiing aircraft. She notices a "wet spot" on the right main tire and radios the pilot. The pilot tells the controller that he probably ran over a puddle and asks for his clearance.

At the destination airport, the pilot executes a perfect landing and applies the brakes. The leaking hydraulic fluid heats up and ignites. The right main landing gear is engulfed in flames. The controller notifies the pilot and then calls the crash fire rescue squad. The pilot calmly and proficiently manages the situation, successfully evacuating everyone from the aircraft without injury. The pilot and passengers watch from a safe distance while a perfectly good aircraft burns to the ground. "How could this have happened?" wonders the pilot.

Soon afterwards, the pilot is fired for failure to perform an adequate preflight inspection. Six months later, an aircraft is being towed out of a hanger. One of the employees sees wetness on the left main landing gear tire as he unhooks the tow bar...

“Winding the Watch”

If you have ever been around the older pilots who have seen a thing or two, they will always tell you the adage of “Winding the watch.” What they are referring to is taking a moment to pause and analyze the situation before we act. We as pilots are mission and safety oriented, and when faced with a stressful task - we want to solve it immediately. Often time the best course of action is to slow down and think. VSOAR data shows that we tend to rush and make more mistakes. When one thing happened, another is very likely.

“If you think you are going slow, go slower.” The worst thing you can do is to speed up and start making mistakes.

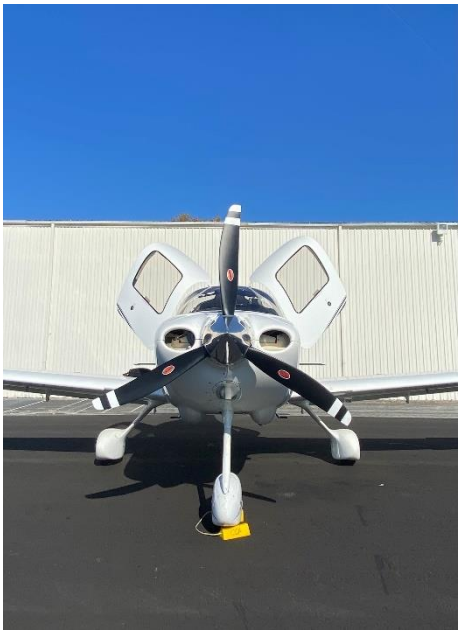
When faced with an emergency first, accomplish the items we have memorized to handle that scenario, pull out a checklist and take a deep breath to slow down. When faced with an abnormal scenario first, take a deep breath to slow down and pull out a checklist. For example, let’s say while descending to the destination airport the alternator fails. You pull out a checklist and try to solve the issue and it seems to be intermittent and can’t quite tell what the problem is. You enter the traffic pattern, and the radio begins to flicker, and you realize the breaker has popped. You got to investigate why it is out and have the surprise of your life when another airplane passes 5 feet above you. Being “heads down” trying to solve the problem did not help. Slow down, wind the watch, and see the bigger picture.

DO NOT RUSH

Ground Operations

VSOAR data shown an increasing trend with ground ops leading to potential issues. Note the CCA SOPM says:

> *"On the ramp, taxi no faster than a slow walk (5 knots ground speed or less) and slower when close to any obstruction. Exercise extreme caution when taxiing near any obstructions. Whenever the clearance is in question, STOP the aircraft, shutdown the engine and have the aircraft towed or the obstruction removed."*



Never under any circumstances should you be taxiing close to another building, airplane, vehicle, or person. Always get out and look. This includes high power taxiing near obstacles. Remember that the propeller causes a huge amount of air movement behind the airplane that can blow over something or hurt someone. Additionally, the CCA SOPM says, "On the taxiways, taxi at a brisk walking speed that will allow an immediate safe stop, therefore do not taxi greater than 10 knots ground speed. Do not ride the brakes and use power to control the taxi speed."

Avoid taxiing an airplane near uneven pavement or unimproved surfaces. Rock can be sucked up and cause damage to the propeller or airframe. Uneven pavement or sloped ground can potentially cause a propeller strike and cause significant damage.

SAFETY TEAM YEARLY HOT TOPIC

What is an "Aircraft Upset"?

The FAA defines an aircraft upset as "an airplane in flight unintentionally exceeding the parameters normally experienced in line operations [Normal Rental Ops] or training." FAA Advisory circular AC 120-111 Upset Prevention and Recovery Training covers this topic in greater detail. The following is a general list of steps for recognizing aircraft upsets:

- Step 1: **FLY THE AIRPLANE AND DO NOT RUSH**
- Step 2: Recognize
    - Identify nose high (attitude above the horizon line) or nose low (attitude below the horizon line). This will be accomplished by using outside visual cues, if available. If no outside visual references are available, use the attitude Indicator and airspeed Indicator to determine pitch attitude. Even if outside references are available, it is best to use the flight instruments to verify suspected attitude in conjunction with outside cues.

    - Recognition can be more difficult than you may think. If you are in actual instrument conditions when the upset occurs determining your attitude may be very difficult.
    - Use caution as the attitude indicator may have exceeded its serviceable limits if the upset is aggressive enough.
- Step 3: Power
    - If attitude is high = Apply full throttle and advance mixture to rich
    - If attitude is low = Reduce the throttle to idle
- Step 4: Pitch/Roll
    - If attitude is high = Apply nose-down input to return to an attitude for level flight. Simultaneously roll wings to level.
    - If attitude is low = FIRST, roll wings to level. Once level wings, apply nose-up inputs to return aircraft to an attitude for level flight.
- Step 5: Return to Level Controlled Flight
    - Once the aircraft returns to a level flight attitude, airspeed stabilizes, altitude stabilizes, and heading stabilizes, you have successfully recovered.

What is a "Pitch Trim Runaway"?

A pitch trim runaway is defined as when a trimmable control surface begins to trim uncommanded to a full trim limit. For CCA, this applies to aircraft equipped with electric pitch trim. This may occur if the pitch trim servo fails or receives electronic input forcing it to operate continuously commanding an aggressive input. The pilot will recognize this by the aircraft unexpectedly pitching up or down aggressively. The pilot must follow the *Pitch-Trim Runaway emergency procedures* found in the POH, AFM, Applicable Supplement or CCA checklist (In that order).

FLY THE AIRPLANE AND DO NOT RUSH

In any airplane, treat the trim runaway as an aircraft upset and follow the Upset Recovery procedures, as necessary*. Remember you did not plan for this to occur.

- In the PA-28 series airplanes equipped with an autopilot, you should immediately **press and hold the AP/TRIM DISC Button** and manually return the trim wheel to neutral.
- In the PA-28 series airplanes not equipped with an autopilot, you should **press the PITCH TRIM button and pull the PITCH TRIM circuit breaker** and manually return the trim wheel to neutral.
- In the C172 series airplanes equipped with an autopilot, you should immediately **press and hold the AP/TRIM DISC Button** and manually return the trim wheel to neutral.

*You may not want to reduce power to idle or full open if the runaway is caught early or close to the terrain/obstacles. Use good judgment and fly the airplane.

Can trim cause an upset without a trim-runaway?

Yes. If a trim indicator is not calibrated or is missing, unexpected aerodynamic forces may be felt during takeoff. If a trim indicator is not working properly the following may happen:

FLY THE AIRPLANE AND DO NOT RUSH

- Trim unexpected full-nose down: Extreme back-pressure will be required to lift the aircraft off the ground. Obstacle clearance and initial climb performance will be

degraded. The pilot should reduce the power to idle and reject the takeoff (If sufficient remains)

- Trim unexpected full-nose up: Aircraft may become airborne at speeds lower than normal and will have an excessive pitching up tendency; extreme nose-down inputs will become necessary. The pilot should apply the necessary nose-down input to maintain a climb attitude to clear obstacles (this may be a large input). Upon reaching a safe altitude of 1,000' AGL the pilot should begin to diagnose the problem (Trim not set proper or trim-runaway). It may be necessary to complete memory items early to prevent loss of control.

Do not be afraid to make full control inputs to the "stop" to maintain aircraft control.

What if I have reached full control input and still can't control the airplane?
FLY THE AIRPLANE AND DO NOT RUSH

- Attitude High: Consider rolling the airplane into a shallow to medium bank turn. This will reduce the aircraft's vertical component of lift and slow the pitch up. It is counterintuitive but a slight reduction in power may assist the plane to reduce the nose up pitching moment (Caution as aircraft is close to the critical angle of attack).
- Attitude Low: Per aircraft upset recovery procedures roll wings to level to ensure the maximum vertical component of lift perpendicular to the horizon. It is counterintuitive but a slight increase in power may assist the plane to reduce the nose down pitching moment (Use extreme caution and observe speed/structural limits).

How can I check for proper trim operation during pre-flight?

If the aircraft is equipped with an autopilot, the pilot will complete the autopilot function test found in the POH, AFM, Applicable Supplement or CCA Checklist (In that order). After completing test ensure the trim is returned to the takeoff setting. It is important to ensure the trim is in the takeoff position for that flight as this setting will allow for full control authority.

If the aircraft is equipped with electric pitch trim (no autopilot), the pilot will check trim functionality and ensure the disconnect button works properly. After completing test ensure the trim is returned to the takeoff setting. It is important to ensure the trim is in the takeoff position for that flight as this setting will allow for full control authority.

During the pre-flight inspection, verify the trim wheel in the cockpit works properly and the anti-servo tab actuates properly. When the trim is set to "Neutral" or "Takeoff" the anti-servo tab should be flush with the trailing edge to the stabilator (Control wheel neutral). If anything looks wrong, contact maintenance.

Pitch Trim set to Neutral

Pitch Trim set to Full Nose-Down

Pitch Trim set to Full Nose-Up

A combination of neutral trim indication in the cockpit/neutral control wheel should result in the anti-servo tab being flush with the trailing edge of the horizontal stabilator.

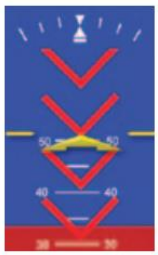
Example.
If this combination is found, do not attempt to fly. Contact maintenance as there is an issue with the trim indication or trim system. This is an example of a faulty trim indicator.

NOT GOOD FOR PREFLIGHT*

**If control wheel is neutral*

NOTE

The Aspen EFD1000 provides excessive pitch awareness through chevrons indicating direction to fly. At extreme pitch attitudes (above 30º nose up or below 25º nose down), red Unusual Attitude Recovery chevrons come into view, pointing towards the horizon or ground as applicable (see Chapter 4, Section 4.2.1.2. Pitch Scale). At extreme pitch attitudes, some sky (blue) or ground (brown) will always be displayed to help maintain situational awareness, even though the horizon line may be off-scale.



REMEMBER PITCH WITH THE ARROWS

***Our G-1000 Equipped airplanes have similar features. ***

***Our G-5 Equipped aircraft DO NOT have this pitch protection features. ***

DO NOT let the aircraft deviate from the intended flight path. Continuously work to return the aircraft to the intended flight path by following upset recovery procedures

VSOAR CALLBACK

"Cylinder 1 EGT showed unusually high, I [Pilot] was on VFR delay vectors, so requested to head directly to the airport [Reading, PA] for a straight-in runway 36. ATC declared an emergency on my behalf, and rolled the fire trucks"

2022 Anonymous VSOAR Report

Lessons Leaned

Excellent job by the pilot to recognize an abnormal engine condition and take corrective actions that lead to a safe outcome. If you are considering declaring an emergency, the decision has already been made. Reach out to ATC and get the appropriate help and services they can provide.

Maintenance inspected the airplane and found a faulty EGT probe to be the culprit.

Lessons Leaned

When it comes to making mistakes, we ALL make them. Making mistakes is a part of being a pilot. The best thing we can do is tell someone (File a VSOAR or talk to your CFI) and learn from those moments.

Maintenance was able to inspect the plane after and found no damage.

"Student was flying LOC 28 in PTW. When leveling at MDA, full power was applied, and airspeed accelerated to 112 KIAS (V_{FE} is 103KIAS). CFI noticed this and promptly reduced power to idle."

2022 Anonymous VSOAR Report

"Partial Power interruption due to transformer issues [At KMQS]. During power outage replacing transformer the AWOS was not transmitting on 126.25 or available via landline 610-384-6132. 2 Backup generators East of hanger 2 did not fire after power loss… [Pilots diverted to KLNS due to no airport lighting]"

2022 Anonymous VSOAR Report

Lessons Leaned

As Piot-in-Command we are tasked with making important decisions to endure a safe outcome of that flight. This was a scenario we never even considered but this pilot found themselves in. They made an excellent decision to divert to another airport since Chester County had no runway/airport lighting.

Yes, this did cause issues for the purposed flight, but CCA ensured they got home on time that night. Never let the get-there-its force you into making a poor choice, there is always another "out."

Lessons Leaned

When the aircraft starts doing something we don't want to do we as pilots begin to fight it. In training we call these unusual attitudes, and we work to recover from them. We often will have a very difficult time attempting to recognize them, but this pilot did that.

The aircraft had an issue with the trim indication and a potential trim runway.

"During the takeoff, immediately after rotation, the aircraft encountered a severe nose up force on the yoke. The trim indicated neutral. We [Pilot] trimmed the airplane nose down and maintained control of the aircraft."

2022 Anonymous VSOAR Report

"I [Pilot] was unable to contact Philadelphia [ATC] on the radio after departure from within the TFR, called Lancaster to inform them they were not able to reach Philadelphia. Received a phone number and was informed no more action will be taken"

2022 Anonymous VSOAR Report

Lessons Leaned

The VIP TFRs we are faced with seem to be all the time and very commonplace. Although we can never become complacent with this TFR. The airspace, if violated, can carry some major penalties to pilots.

If you can't contact ATC on the assigned frequency, call 121.500 Mhz. If you are unable to contact any controller, squawk 7600 and land as soon as practical.

Follow proper protocol and always be prepared for an unexpected failure.

Lessons Leaned

Anytime any pilot walks away from an airplane, they must be sure that it is secure. Anything can happen to that airplane while you are gone. This includes control locks, door locks, cowling plugs, tie downs (If necessary), and wheel chocks.

The CCA SOPM also requires us to check all of these items anytime we are walking away from an airplane no matter the length of time.

"During preflight [the] student removed nose wheel chocks after setting parking brake during preflight. A/C was parked in spot 7 which has a slight grade towards the center of the alleyway. Student returned into the Flight school office leaving the a/c unattended and un-chocked. Aircraft did not move during this time."

2022 Anonymous VSOAR Report