The Safety Beacon is for informational purposes. Simply reading the Beacon does not satisfy your monthly safety education requirements but unit safety officers are encouraged to use the articles in the Beacon as topics for their monthly safety briefings and discussions.

December 2015

What's in This Issue?

- A couple of our CAP pilots stepped forward to talk about a minor landing mishap they had, and what they learned about Crew Resource Management in the process. Check it out on the next page, and if you are a CRM expert or CRM teacher, look to the end of the story where we'll be asking for your help.

- There is a wide variety of short topics this month, with a few informative links. Holiday safety, guidance on flying "toy" drones, information on aircraft tire inflation, pre-flights, post-flights, mishap reviews and even a quick clarification on a "guard the controls" comment from last month's Beacon.

- There is a very timely article on how to avoid a "wildlife strike" in your vehicle or in your airplane, and what you should know if you ever find yourself in that situation.

- Would you know what to do if someone targeted you with a laser while you were flying? Those incidents are becoming more common and Col Castle gives some great pointers on what to do and how to report it if it happens to you.

- We've also got the mishap closeouts for the month. Lots of lessons to learn from these stories.

- Finally, from me, Col Castle, and all the members of the safety team, we wish you a joyous holiday season with your friends, families, colleagues and loved ones. Think about what you're doing, keep each other safe, and remember, "Nobody gets hurt!"

“Go Around!”

Poor CRM? Yes, it can happen to you!

George Vogt, CAP/SE

All of us who have been pilots or crewmembers for a while have heard of Crew Resource Management (CRM). Usually the discussion of CRM is in the context of major airline accidents from the past, where part of the cause of the accident was poor crew coordination when solving a problem in the cockpit, or poor communication between crewmembers. Based on lessons learned from these accidents, the FAA, airlines, the military, and others have developed CRM training courses for their crews.

CAP aviators are not immune to the problems that can arise from poor crew coordination or poor communication between crew members. I’d like to tell you about a CAP aircraft mishap that involved these exact same problems. Luckily the mishap was minor, the aircraft wasn’t badly damaged, and most importantly the crewmembers are around to tell their story. For the purposes of this article, I won’t tell you who they were or what wing they’re from. That’s not important. I’ll call them PF (Pilot Flying) and PNF (Pilot Not Flying). Both of these CAP pilots willingly told me their story so that their fellow Airmen could learn from their mistakes, and for that I am exceedingly grateful.

The flight was a Counter Drug mission. The two pilots were highly experienced CAP mission pilots. The PF was a check pilot evaluator. The mission was routine until they began their return to base. The weather report they got from AWOS (Automated Weather Observing System) said the winds were about 70^{o} off runway heading and would be close to crosswind limits for the C182 they were flying…a wind that needs to be respected but something they both felt they could easily handle. The runway was long enough at over 3800’ and both were familiar with the airfield.

Discussion of the winds, calculating the crosswind component, and the discussion of the crosswind technique they would use (10^{o} flaps and “a few extra knots” on final) took longer than expected. As the PNF said, “the incident chain probably started about five miles out” when they got the information on the winds. The PF was a bit late retarding the power and beginning the descent. He was able to correct to a normal glide-slope by the time they were on half-mile final, but the airspeed was still over 100 knots.

At this point the PNF was “starting to have doubts about how this was going to turn out” but he respected the PF’s flying skills, and said nothing.

They crossed the threshold at about 100 knots. Significantly faster than normal. The PF began to flare the aircraft at about 90 kts. As the PF later said, he let his “macho…I can do this” mindset take over.

The PNF said, “too fast, we need to go around.”
The PF replied, “we can make it.”

The PNF repeated his “go around” call more forcefully and the PF replied “I can do this.”

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By then the aircraft was nearly halfway down the runway. They touched down at 75-80 knots. The PF began aggressive braking and managed to stop the airplane before the end of the runway. As he later said, the only damage was "two significantly flat-spotted tires and a bruised ego." What probably bothered him the most was that he felt he lost the respect and confidence of a fellow aviator and friend when he knew better.

The PF mentioned two major errors that he feels led to this mishap. "1) I failed to establish a standard of performance and live by that standard, and 2) I failed to listen to my crewmember." The "standard of performance" he is referring to is a personal standard of his to land in the first third of the runway and if that isn't possible then go around.

A few months ago we had an article in the Beacon about setting your own personal minimums when flying. That discussion was primarily about weather minimums, ceilings, visibility and crosswinds. I also like to set "windows" for my flight parameters, and if I'm outside those "windows" I either correct or go-around. Determine your window, or position on final, where you want to be configured for landing, on airspeed, on course, on glide path, and trimmed. If you aren't on parameters when you fly through your "window" (perhaps coming over the threshold) and you can't safely correct, then a go-around is the proper decision. If you have pre-determined when you will make the go-around decision, the go-around decision is easier to make when the time comes.

There are definitely some Crew Resource Management lessons to be learned from this mishap, and in the future we will work hard to provide some good CRM training and educational briefings for our aircrews. For now, I'd like to highlight just a few lessons you can take with you.

- CRM starts before the sortie and lasts until after the sortie. Every pre-brief should include a thorough discussion about who is in charge, what the mission profile is, and each crewmember's role during each phase of flight.
- During the pre-brief, encourage all crewmembers to speak up when they see something wrong. Invite questions.
- Before each approach, it is a good idea to brief the approach, even if it is just to confirm the runway, the winds, your planned configuration, your planned airspeed on final, and what you would like to have the other pilot say if you get off your briefed parameters. INVITE THEM to be a part of the team.
- After you land, make sure you take a couple minutes to privately and frankly discuss your performance as individuals and as crewmembers during the flight. Talk about the high points and point out the errors, with the goal of reinforcing the good and learning from the not-so good.

From the pre-flight briefing all the way through the post-flight briefing, you must invite and be receptive to inputs from each other to overcome common problems like the macho "I can do it" or the hesitancy to speak up when needed. When it comes to Crew Resource Management, the most valuable "resource" you have is that set of eyes sitting next to you. Make sure you are using that resource.

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CRM Experts?

We are interested in developing some CRM training specific to our CAP missions, aircraft, and aircrews. If you instruct CRM in the military, for an airline, or in a college setting and you would like to take part, drop us a line!

safety@capnhq.gov

SAFETY SHORTS

George Vogt, CAP/SE

"Guard the controls…"

Last month Maj Gen Vazquez wrote a great article on some general rules check pilots could use to reduce the risk associated with these demanding evaluation sorties, and make these missions run more smoothly and more effectively. One comment he made raised a couple questions. He stated that a check pilot should "guard the controls as if an applicant is a first time solo student."

The key here is that he "guards" the controls. He does not "ride" the controls. As some of our members have pointed out, riding the controls, resting your feet on the rudder pedals, or otherwise making any control inputs while another person is flying can lead to confusion about who is flying which is a dangerous situation.

The pre-flight briefing between the pilots should clearly define the roles of each crewmember, how change of aircraft control will be executed, and how and when the check pilot might take control of the airplane when the situation dictates.

In short, whenever a pilot is flying as an instructor or check pilot, they should have their hands and feet in a position that allows them to take control of the aircraft immediately if the situation dictates. Guard the controls, but don't ride the controls.

Who should do the mishap review?

When there are minor mishaps, whether they are aircraft related, bodily injuries, or vehicle mishaps, it is common to see the person who was involved in the mishap put the report in eServices. That is fine and in the case of very minor mishaps, the information provided by the person involved is enough and a mishap review officer isn't needed. In cases where a mishap review officer is required, or whenever there is a significant injury, or bent metal, wing commanders should probably assign a review officer and that review officer should NOT be the person involved in the mishap. Whenever possible, the review officer should not belong to the same unit as the people involved in the mishap. This allows the mishap review officer to take a neutral unbiased look at the mishap from all viewpoints to ensure we get a clear picture of what happened and what lessons can be learned.

Pre-flight? Post-flight?

We have seen a good number of minor aircraft mishaps lately where there is minor damage to the aircraft but it is impossible to determine when the damage occurred. This seems to happen when pilots don't do a thorough pre-flight or post-flight inspection of the aircraft. I personally think a pilot should be able to tell a mishap review officer, definitively, if the damage in question was there before the flight and/or if the damage was there after the flight. There should never be a case where a pilot has to say, "I don't think I did that but I didn't check it before I took off."

You are not alone!

Everyone has seen some changes taking place in the CAP Safety Program, and there are more changes to come. We'll try to get the word out to everyone, but please ask questions. No one should feel like they need to "figure it out" for themselves; quit the local debates about hard to understand regulations. If safety guidance isn't clear, or you're wondering what we want you to do in a certain situation, let us know. Ask your safety officer. If they don't know, ask a director of safety. If they don't know, ask us at safety@capnhq.gov . We'll make sure everyone knows the answer before we're done. Your questions let us know what you're thinking and will ultimately help clarify and simplify the Safety Program.

Monthly Safety Briefing Ideas

I know good safety officers are always looking for new topics for their monthly safety briefings. One of the best sources for those briefings is the Beacon. Review some of the articles and use them to lead discussions among your members. Choose an article from the Beacon, ask your members to read it, then lead a discussion on what can be learned from that article. What risk management was performed, and could it have been done better? Would you have done something different? Why? In each discussion, emphasize all the steps of risk management, and before long your members will think "risk management" for all they do.

Are you part of a region or wing staff? Directors of safety are encouraged to guide a safety discussion via a teleconference or using go-to-meeting software.

And remember, your safety briefings don't have to be about how to avoid a particular hazard like icy roads or dangerous chainsaws. Use the time to learn "about" safety, and risk management, and how to identify hazards, and how to keep yourself and each other safe.

"Tommy got a drone!"

It seems like one of the most-wanted toys this year, for kids and adults alike, is a drone with a camera attached! Great fun, right? Well, use caution, and get some information before you unwrap your new drone on Christmas morning and head out the door to fly. The FAA doesn't consider these to be toys. They are considered aircraft, and certain rules apply.

Here's a link to an excellent Air Force article on some of the things you need to know before you step out to fly your new drone: Air Force News: Drones

Airplane Tire Inflation

One of the most common, and perhaps least understood, reasons for flat tires on general aviation aircraft like we fly in CAP, is under inflation of tires. Having an under inflated tire can cause the tire to shift slightly on the wheel when the aircraft touches down. Under-inflation can cause the sidewalls to over flex causing damage and heat build-up. An under-inflated tire deforms/compresses more on landing causing ply damage. Inner tubes can shift causing earlier than normal failure of the tube or valve stem.

An FAA approved tire can lose up to 5% of its air pressure each day. The FAA recommends removing a tire from service if it drops below 90% of its recommended operating pressure. The scary part is that you can't visually tell if a tire is 10% or 15% or even 20% low.

So what can you do? That's as simple as following your checklist. The pre-flight checklist (C182 example) specifies that you should check each tire's pressure. For example, under the heading of "Preflight Right Wing" item 3 says, "Main Wheel Tire (42 PSI) …. Check." Are you following the checklist? Did you check?

We are working on ways to ensure reliable tire gauges are readily available, but ultimately the responsibility rests with each pilot. Are you following the checklist? That's a *yes* or *no* question.

Holiday Safety

It is easy to get distracted during the holidays, and our seasonal celebrations bring some unique hazards. Take the time to think about how you personally can keep yourself and your loved ones safe, so this can be a truly joyous holiday season. Here are some tips from the National Safety Council: NSC Holiday Safety

safety@capnhq.gov

Motor Vehicles and Wildlife

Colonel Robert Castle, CAP/SEA

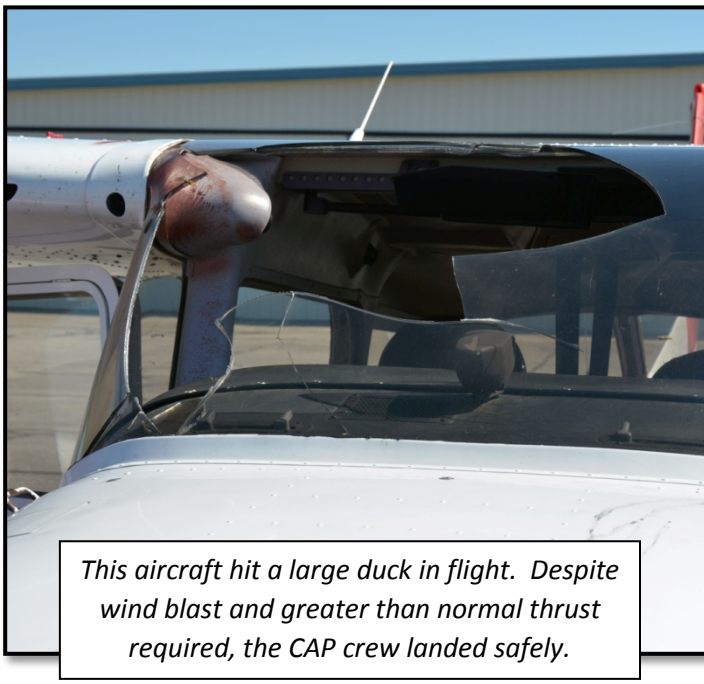
Motor Vehicles (I'm including cars, vans, SUVs **and** airplanes) and wildlife don't mix well together. The size of the animal and the speed of the vehicle at the time of impact are prime factors in how much damage is done. The animal is usually the biggest loser, but humans can sustain significant injuries from animal remains, shrapnel, broken glass and wind blast.

Just on the aviation side, there have been about 142,000 wildlife strikes with civil aircraft in the US between 1990 and 2013 (about 11,000 strikes at 650 airports in 2013). About 60% of bird strikes with civil aircraft occur during landing phases of flight (descent, approach and landing roll); 37% occur during take-off run and climb; and the remainder occur during the enroute phase.

So what can we do to help reduce the risk of hitting an animal?

For aircraft:

- Check NOTAMS/ATIS for bird activity at departure and destination airports. The Air Force Avian Hazard Advisory System allows pilots to view bird risk data in a variety of formats for both military and civil airports and airways.
- Plan to fly as high as possible; most birds fly below 2500 ft.
- If you see hazardous birds on or near runways, get airport personnel to move them BEFORE you takeoff.
- Avoid bird sanctuaries and coastlines in spring.
- Many hazardous species are colored such that they merge into the background making them difficult to see.
- The higher the airspeed, the greater the risk and consequent damage.
- Turn on landing/taxi lights or pulse lights during the daytime to make you more visible to birds (and other aircraft).
- Birds usually escape by diving, so try to fly over them, but do NOT risk a stall or spin.
- Avoid distraction – FLY THE AIRCRAFT.
- Report ALL bird strikes.



This aircraft hit a large duck in flight. Despite wind blast and greater than normal thrust required, the CAP crew landed safely.

To report a bird strike, visit the FAA Wildlife Strike Report page. There are instructions on how to collect and submit bird remains for identification purposes. Reporting wildlife strikes is crucial to the continuing effort of birdstrike prevention. Identification of bird species involved in bird/aircraft strikes is an important part of the overall assessment and management of wildlife mitigation at airports. Knowing the exact species provides guidance to the size, behavior, and ecology of the bird in question and is key to tracking species trends as well as focusing preventative measures.

Visit the FAA Wildlife Mitigation page for more information and useful videos.

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For Other Vehicles (cars, vans, SUVs):

- Pay attention to roadway wildlife warning signs
- Reduce speed to give yourself more time to see wildlife on the road and react.
- Do not take unsafe evasive actions. Serious accidents can occur when drivers lose control of their vehicles trying to avoid an animal.
- Keep head lights, signal lights, and tail lights clean and in good working order.
- Clean your windshield, inside and out and check and repair windshield wiper blades.
- Keep headlights properly aligned to avoid blinding other drivers and optimize road coverage.
- Wear your seatbelt at all times.
- Honk your horn or flash your lights to scare animals off the road. This may scare a deer off the road, but does not usually work for moose.
- In a three lane situation, when it is safe to do so, and when it is not impeding other traffic, drive in the middle lane to provide more distance from the ditch.
- Use high beams when it is safe to do so, and scan the road ahead with quick glances.
- If you are involved in a wildlife/vehicle collision:
- Make sure you and your passengers are okay.
- Pull to the side of the road and put on your emergency lights.
- Use flares (if you have them) to warn other drivers.
- Call the police and report the accident. This step is extremely important, as many state laws enforce strict penalties for fleeing the scene of an animal-related accident.
- Take pictures of the scene if you have a camera handy. Document any damages to your vehicle.
- If the animal is still alive, keep an eye on it to make sure the (probably terrified) animal doesn't attack before the authorities arrive.
- In any mishap situation, notify your CAP chain of command in accordance with your Wing Mishap Reporting supplement.

The driver of this CAP van hit a large male deer at highway speed. With visibility restricted by the deployed airbag, he was able to keep his cool and safely pull the van to the side of the road.

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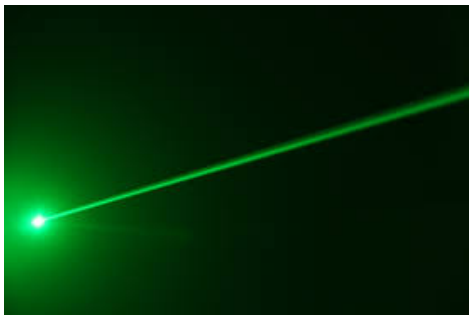
Laser Illumination Reporting

Colonel Robert Castle, CAP/SEA

There have numerous reports on the nightly news recently of airliners and their crews being targeted by lasers. While incidents like this are still rare, CAP pilots aren't immune and need to know what to do in the event someone points a laser at them from the ground.



The FAA developed Advisory Circular AC 70-2A, *Reporting of Laser Illumination of Aircraft*, to provide information, primarily to aircrews, on measures taken by the FAA to address these types of incidents of unauthorized aircraft illumination by lasers.

Although unauthorized laser illumination is difficult to predict there are certain practical actions aircrews should consider before, during, and after encountering laser activity:

- Pilots should avoid flight within areas of reported ongoing unauthorized laser activity to the extent practicable.

- In the event a cautionary broadcast (by ATC or another pilot) regarding unauthorized laser illumination is made within the previous 20 minutes for a particular area, pilots should avoid the area, if practicable.

- In the event laser activity is encountered or reported in the vicinity of flight, pilots operating in accordance with instrument flight rules (IFR) should obtain ATC authorization prior to deviating from their assigned clearance.

- In the event aircrews are unexpectedly exposed to laser illumination, direct eye contact with the beam should be avoided, and eyes should be shielded to the maximum extent possible consistent with aircraft contract and safety. ATC understands that, under these circumstances, aircrews may regard the event as an in-flight emergency and may take evasive action to avoid further exposure to the laser illumination.

- As soon as possible, following an incident, pilots should report it to the appropriate ATC facility in accordance with the guidance provided by this AC. Forward as much information as available. Expeditious reporting will assist law enforcement in locating the source of the laser transmission.

- Pilots are encouraged to complete the FAA Laser Beam Exposure Questionnaire and submit electronically as soon as possible after landing. The questionnaire may also be printed and faxed to WOCC, (202) 267-5289, ATTN: DEN, or emailed to laserreports@faa.gov.

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October Mishap Closeouts

Colonel Robert Castle, CAP/SEA

Bodily Injury – 18, Aircraft – 13, Vehicle - 0

Bodily Injury

Pre-existing Condition - 2	Collision - 1	Insect - 2
Over-exertion - 1	PT Related - 2	Cut - 2
Fainting - 2	Scrape - 1	Rug burn - 1
Eye - 1	Trip - 2	General Pain - 1

A few notes about the injuries in this month's closeout - In one of the preexisting condition mishaps, the member had minor surgery approximately one month prior to the mishap but felt up to the challenge of participating in a unit search exercise over uneven terrain. The member's foot started to cause pain partway through the exercise and the member did the right thing by letting the ground team leader know so arrangements could be made to transport the member back to the mission base.

One unit was conducting rocket launches as part of an aerospace education class using baking soda and vinegar and a cadet got vinegar in their eyes (the report doesn't say *how* during preparation or launch). Fortunately, the cadet suffered no lasting injury. The unit's corrective action was to purchase safety glasses to be used for similar labs. This is a good example to illustrate how a **pre-event hazard assessment** might have identified the risks and led the unit to develop mitigations. An assessment can't cover all conceivable hazards (after all, the sun *could* go super nova), but it's a proactive step to include your unit safety officer during event planning to address risks and eliminate or mitigate as much as possible.

In another PT related injury, a cadet running on the airport parking ramp tripped on a set of tie down chains in low light conditions suffering scrapes to a hand and knee. First aid was provided and the cadet returned to unit activities. First off, aircraft parking areas are designed for parking airplanes, not to be a running track. This is not the only unit around the country that does their PT on an airport, but members should consider other locations more suitable for running such as a school or church track. No matter where you choose to run, the route should be walked before the event to ensure no hazards are present. Recent changes to the cadet physical fitness program should help reduce the number of cadets injured during testing so be sure to refer to the current version of CAPR 52-16.

One squadron was performing a low-crawl activity during their physical training night. Cadet leadership briefed the cadets that they were in a room with carpet and to be cautious about rug burns while performing the activity. The injured cadet received some scuffs on their knees during the activity. This unit performed a risk assessment, recognized the hazard and briefed the participants on the hazard.

Aircraft

- Airspeed indicator (C-182R) not working at take-off following 100 hour/annual inspection. The pilot returned for an immediate landing and returned to maintenance.
  -- Maintenance determined that some very small object had made its way into the pitot tube system during maintenance. When the system was blown out, the airspeed system was tested and found to be fully operational. Recommendation: ensure all maintenance facilities keep the pitot tube cover installed on the pitot tube at all times during all maintenance events (except for pitot heat testing).

- During the course of cadet glider o-ride operations the tow plane (C-182R) suffered a flat tire and had to be towed back to the hangar.
  --The aircraft landed on runway 30, with a 70° crosswind (230° at 11 knots gusting to 17 knots). With the tow line attached pilots may land a little longer, so heavy braking occasionally occurs to make a turn off. (*Editor's note: procedures should be reviewed so pilots aren't faced with this either/or decision. An early turnoff may expedite operations but it could also increase risk.)*

- Aircraft (C-182T) was repeatedly targeted from ground by spot light during night traffic pattern activity. The illumination was reported to the airport control tower who in turn notified local law enforcement, which responded to the scene. See article in this Beacon for more information on what actions to take in a laser or spotlighting situation.

- The aircraft (C-182T) was crossing the runway threshold at approximately 50 ft AGL for a night landing when it sustained a bird strike to the left wing of the aircraft. The pilot heard the noise and then inspected the aircraft upon landing but did not see the dent. The mission was continued and completed on schedule. The dent was discovered when the pilot was cleaning bugs from the wing at the completion of the last flight.

- After takeoff (C-182R) the crew noted a slight discharge on the ammeter without illumination of the Low Voltage light.
  -- The crew landed safely and turned the aircraft over to maintenance for troubleshooting. Maintenance replaced the alternator and the aircraft returned to service.

- Preflight inspection of the co-pilot's window (C-182T) was normal. After flying with the window opened to take aerial photographs, pilot discovered some play in the hinges.
  -- The Wing instituted a prohibition on opening the window while the engine was operating above idle power.

- Pilot recorded discrepancy in WMIRS, "Slight right aileron and right rudder required to fly straight and level." The exact date of damage to the aileron is unknown, but is believed to have happened while parked in a "community" hangar.
  -- The damage is on the upper surface and could have been easily missed during a preflight inspection. The damage was noted during a maintenance inspection by our Maintenance Officer. No further information is available.

- Descending from 3000' to 2000' MSL on approach for landing, a bird struck the airplane (C-172S) at the lower edge of the windshield on the approximate fuselage centerline.
  -- No injuries to the crew and no damage to the airplane.

- Shortly after engine shutdown, the nose tire (T-182) went flat.
    -- Upon removal of the inner-tube, the mechanic found a small pinhole puncture on the side of the tube.

- Aircraft (C-172R) lost power during flight. The crew was able to return safely to an airport where the engine quit during taxi.
    -- Initial finding indicated a stuck valve on #4 cylinder followed by engine ingestion of broken parts with subsequent failure of #1 cylinder.

- Very light hail damage to upper side of control surfaces (T-182), very slight bend in upper surface of the left flap, about 12 - 24 inches from the outside edge.
    -- Control surfaces were inspected by a mechanic and found that the hail damage was minor and the aircraft was safe to fly.

- Right tire (C-182R) failed upon landing.
    -- The CAP pilot was concerned about faster traffic following him. He used heavy braking to try to slow for the closest taxiway. Heavy braking, combined with incorrect crosswind controls appear to have resulted in a locked wheel and tire failure from skid. Still concerned about the traffic following him, the pilot elected to turn off the runway into the dirt rather than stopping straight ahead or continue to the taxiway.
    -- (*Editor's note: You primary concern when landing an airplane, is to safely land the airplane. Period. In an effort to be nice to the airplane following, this pilot ended up with a flat tire and departed the runway surface. Let them go around while you safely land your plane.*)

- Pilot discovered a dent with blue paint transfer on tailing edge of aircraft rudder (C-172S) during pre-flight inspection.
    -- Hangar is shared with other operators and responsible party could not be identified. Aircraft inspected and repair not required.

Hazard Notices

- In the floor of the main hallway in the meeting building is an upward shift in the tile floor that is possibly a tripping hazard. Submitted by Lt Col Melvin Stonebraker, RMR-CO-147

-- CLOSED: The state is conducting a remodel of the readiness center. The area mentioned in the hazard report is closed to CAP members during the remodel. This information has been shared with squadron members and is no longer a hazard to members in the performance of their duties.

- As I was turning onto the road at the local airport I noted three small orange cones with reflective strips. They were very bright in my headlights and to my right I noted a vague movement. This distracted my attention to my right. This happened in the evening as twilight was just turning into night. There was no overhead street light in the immediate area. As my attention was distracted to my right a large body of cadets crossed the road right in front moving from left to right. They were all dressing in black shirts, pants/shorts and dark shoes. There were several people in yellow vests, but the vests were not really visible and they were at back of the group. I did not note any use of flashlights. Submitted by Maj Susan Wilson, RMR-CO-136

-- CLOSED: Recommendations for personnel movements include reflective vests for all members, flashlights and road guards while crossing streets.

-- *(Editors note: We can all learn from this close call. People walking or in formation need to be aware of vehicles, realizing pedestrians are very hard to see at night. CAP members driving near cadet activities need to go very slowly and be constantly alert for pedestrians of any kind)*

- Last week, after our meeting when we went to leave the Cadet Gym on the Air Force Academy, it was noticed that a black bear was sitting just outside the door. We have wild life in the area at all times and most times it is not a problem. We should be more observant prior to leaving the building to verify there are no dangerous animals lurking outside the door prior to leaving the building. Submitted by Lt Col Michael Fay, RMR-CO-159

-- CLOSED: Verify no dangerous animals prior to leaving the building. If animals are noticed, call for support from security forces.

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safety@capnhq.gov