

## “Riveting Reading”

Civil Air Patrol  
North Carolina Wing  
Aircraft Maintenance

May '21. Vol #42

By Major Martin ‘Stryker’ Heller



### ‘Thor’ No More: On 5 Apr, NHQ Reassigned N9930E from NCWG

To: NCWG Commanders, Operations Officers, Crew Chiefs & Aircrews;

1. **Motivational Quote:** “We are what we repeatedly do. Excellence, then, is not an act, but a habit.” Aristotle

**1a. NCWG Director of Operations (NCWG/DO) Comments:** A great deal of time, money, and yes, requirements, go into the assembly and production of each SET of checklists the NCWG place in each one of our assigned aircraft. We would deeply appreciate anyone using these fine aircraft to please consider reading these interesting & reasonably comprehensive documents before, during, and after use of our well-equipped and maintained aircraft. Please remember we all share in the responsibilities of the professional pilot. -- Lt Col Matthew Urbanek

**1b. NCWG Director of Stan/Eval (NCWG/DOV) Comments:** The Air Force has long used Continuing Training (CT) as a safety tool and a way to keep people informed. We had one in April on CAPS 71-4&5 with about 30 people in attendance. The next one is scheduled for this Tuesday, May 4 at 1900 local time on teams. All CAP pilots should have received an invitation. The third one is scheduled for Wednesday June 2 at 19:00 on teams. This will be a ForeFlight Forum (mostly Q&A) and we are looking for one or two more panel members. If you are interested, please email me. Future meetings will be the first week of the month and the day will rotate Monday through Thursday so everyone will have an equal opportunity to attend. -- Lt Col Arnie "Speedway" Andresen

**1c. April Highlights:** NCWG flew ~390 hours, ~100 more than March’s 289 hours; and that is down 2 ½ aircraft, plus six aircraft in for 100 hr/annual inspections. The Army Air Operations Branch (AOB) training missions restarted as well as USAF Low Level Route validation. **Lt Col Arnie ‘Speedway’ Andresen** replaced **Major David ‘Lockbox’ Stange** as NCWG’s Chief of Standardization. You probably knew it by the number of emails he has already sent out.

Below is a snapshot summary of the US Army AOB flying support mission which we conducted from April 15 – April 24. The 2-130<sup>th</sup> AOB leadership wrote to Col Angelovich with praise for training his troops. Thanks to the support of all the members that made this mission possible. Without your selfless service we would not have been able to provide the support that we did.

Scheduled Flights	60	Flights Flown	44
Aircraft Involved	13	Cancelled Flights	16
Total Flight Hours	117.6	Volunteer Personnel	57
Total Aircraft Cost	\$10,444.10	Total Fuel Cost	\$4,946.08
Total Cost	\$15,390.18	Average Cost Per Flight Hour	\$130.87

Number of delayed Time On Station reporting due to aircrews having breakfast at Biscuitville; enough to be noted.

In tragic news for those who do not heard, **Capt Gary Moore**, NC-121 – Charlotte Senior Squadron, passed in a hiking accident on 17 April. Gary was a mission pilot, a CAP CFI, an Orientation ride coordinator/pilot, safety officer, and most lately, the crew chief for N716CP. Literally, the day before, he coordinated an emergency tire replacement & returned the aircraft to service. It reminds us of how fragile life can be. Gary will be missed.

**1d. Top Hour Flying Squadron:** NC-019/KAVL, N99885 (49.6 hrs) & N963CP (21 hrs), NC-023/KILM, N908CP (33.7), NC-048/KRDU, N726CP (33.5 hrs), NC-171/KFAY, N727CP (33 hrs) & N4813C (22.5hrs) NC-170/KSUT, N179CP (28.8),

NC-160/KEWN, N98426 (25.9) NC-022/KBUY, N262CP (25.3 hrs). NC-121/KJQF, N716CP; NC-081/KINT, N99832; & NC-305/KECG, N741CP all broke 20 hours. These numbers might be slightly low as the data was pulled 29 April.

**1f. April's NCWG Top Left Seat time pilots are:** Capt Cliff 'Beast' Morris, NC-171, Lt Irving Goldstein, NC-145, and Lt Wendy 'Taz' Peters, all flying about 16 hours. Flights on 30 April may change the order of these top hour earners. The top 'C' Mission pilot was: Cadet/Colonel Graham Davis Collie, NC-019 for 6.4 hours.

**2. Maintenance Month in Review: N405CV (Loki)** returned to service on 7 April. **N819CP (Dixie)** had its engine re-installed on 14 April, tried to fly to KSUT on 15 Apr but needed a replacement main seal. It flew out on 16 April under an FAA Special Airworthiness Permit as it was just out of annual. Both aircraft are back on line now. 8\*)

**2a. Aircraft in Annuals: N4813C (Frank):** Arrived for its 100 hour/annual on 29 March. Passed the Wing Strut attachment AD inspection. AD 2020-25-12 Superior crankshaft N/A. Instrument lights and a host of other little problems fixed. Main gear replacement rotors replaced since they wore too thin. Replaced nose wheel bearings and race due to pitting. Replaced static wick on tail. Replaced Dip Stick Tube Seal due to seepage (so to speak). 'Frank' went back to KFAY on 8 April.

**N9930E (Thor):** NHQ removed **N9930E** from NCWG's ORMS account on 5 April. But it still needed its annual completed in order to make selling it easier. Its unairworthy due to the non-compliance with the Wing Spar AD, but with the annual complete, can be ferried off to its next location. Currently Thor is sitting on the ramp at KSUT. Lt Col Farkas made a 3-minute video tribute at: <https://youtu.be/XXjzb-P3leA> Note the Covid Color Guard at 1:50.

**N726CP (Betty):** Completed IFR Cert which is due in May. Re-weighted aircraft due to W & B accuracy concerns & NCWG website updated. Useful load is down to 799#'s. Installed new battery. Secured copilot upper air vent and standby battery switch. Had front seats recovered. Replaced vacuum pump as vanes were worn out. Fixed loose nose gear which eliminated shimmy. Betty went home on April 16<sup>th</sup> as part of a tail swap with N819CP coming to maintenance.



Left: Original pilot and copilot seats from N726CP. Notice the foam showing on the pilot's seat pad. That makes an airplane unairworthy (a fire hazard).  
Right: Both seats recovered with fire resistant aviation material.



**N819CP (Dixie):** If oil is the lifeblood of an engine, then Dixie was a hemophiliac. Its whole problem started when overhauling an overdue propeller and propeller governor in November. On runup, the new oil bled out. That led to discovering engine issues, and a subsequent crankshaft transplant in Oklahoma at CAP's contracted engine overhaul shop. The engine came back to KBUY and installed the second week of April. On the first flight, oil again came out and H&H Triad Aviation (although not their engine repair) stepped in and replaced the crankshaft main seal. The next day's flight seemed okay, and the aircraft departed to Southport for its annual. On arrival, guess what... oil found on the cowling again.... Turns out both the spring inside the crankshaft main seal came apart and the new propeller seal was gouged. Since the shop had to pull the prop (yet again), they replaced a ripped seal, and balanced the blades. Thor also needed a new battery, and the IFR certification. The shop also replaced an EGT probe, loose rivets on the pilot's door, the right brake caliper seals, flipped a tire for wear, replaced a wheel bearing race, all brake linings & some instrument panel bulbs. Dixie also got new (and painted) elevator right side fairing tip and a new beacon bulb. They did a lot of touch of paint, and cleaning since it sat for 5 ½ months and advised it

really needed a wax job. A few NC-170 pilots then waxed & buffed it out before sending N819CP back to KSVH on 28 April. Dixie was down six months to the day.

**N7360C (Lola):** During her annual at KLHZ, maintenance found and repair skin cracks on the lower left flap, the bottom of the right-side horizontal stabilizer as well as a broken bulkhead on the propeller spinner. They did some other stuff but I haven't seen the paperwork as this newsletter went to press. **Lola** returned to service on 26 April.

**N179CP (Sandy):** Bent nose wheel steering bolt replaced, brake rotors were worn below limits and also needed replacing. The right elevator torque tube re-riveted to the bearing (see box below). Resealed the front windshield, tensioned both the roll and pitch servo cables, flipped both main tires, replaced a cut left main tube, the right main bearing and race due to pitting, and the backup altimeter instrument light. **Sandy** came out of the shop on 28 Apr.



Wig-Wag on the landing lights are good; on the elevator it's bad. The Cessna elevator is actually two halves which join under the tail cone. They are each riveted to a bearing which allows easy travel. If there is play (one can move up, while the other down), the rivets are working loose.

**N98426 (Sarah):** Passed the Wing Strut attachment AD inspection and was the last of NCWG's five aircraft vulnerable to that pricey repair. Fuel sensors were bouncing around and were sent out for rebuild. **N98426** will stay over into May for its inspection completion. →→

**2b. More Maintenance Actions:** We've noticed NCWG has been going through several aircraft batteries after only two-three years. To help ensure longer life (and avoid a \$600+ replacement cost) please remind your maintenance shops to service the battery during the 50-hour oil change. Some already do, but not all. We have also sent our maintenance shops a letter requesting they do the same. We'll look to replace the FLIR aircraft batteries with sealed Concord batteries as battery access involves removing the FLIR ball and support stuff. →→

**N262CP (George)** had an oil change at KSUT while flying aircrew support for the **N726CP** drop-off. While there, maintenance noticed and changed the worn nose wheel tire, adjusted a fast idle and filled the battery. Other Oil changes included: **N99885 (Echo)**. **N716CP** rubbed a tire flat; changed next day at local airport. Careful on these AOB missions where you're flying 40+ touch and goes in 4 hours; you don't want to break off station with no mx. **N963CP** started making funny noises; turns out the magnetos needed to be overhauled and set to Florida for some R&R. Time on the beach always seems to rejuvenate one's sole & we're hoping to have **Gumby** back by 7 May. →→

### 3. Aviation Maintenance Support Information:

**3a. New Aircraft Maintenance Officer (AMO) Guide:** NHQ just published CAPP 130-3, which explains what aircraft maintenance officers job entails. This 25-page guide is found on CAP's publications website at:

[https://www.gocivilairpatrol.com/media/cms/P\\_1303\\_E52FDE28C00CC.pdf](https://www.gocivilairpatrol.com/media/cms/P_1303_E52FDE28C00CC.pdf) →→

**3b. GPS database current cycle (2104) started Apr 22<sup>nd</sup>.** Please update both changed & next due dates in AMRAD.



**3c. Clean Machine/Dirty Bird List:** According to AMRAD (as of 29 Apr) **N938CP, N7360C, N262CP, N179CP, N98426, N741CP, N819CP, N405CV & N99832** all had baths. **N716CP, N437BA, N727CP, & N908CP** are overdue. Aircraft washes due in May include: **N99885, N4813C, N963CP and N726CP.**

(Above: NC-170 cadets & senior washing N179CP at KSUT. If you want pictures of your squadron members washing the airplane, come on down to KSUT and we'll even provide the soap.) →→

As a reminder, when done washing the airplane, the baggage area is not where you store wet rags. Being on the subject of washcloths, you realize they are color-coded for a reason, right? **Blue** clothes are for the windscreen only, so they don't get or oil on them and subsequently on the windscreen; **Green** for oil issues, & **yellow** for the fuselage. Where's it written? <https://ncwg.cap.gov/directorates/operations/aircraft-maintenance/appearance-guidelines> →

Speaking of washing the aircraft, mechanics will do a better job and are more motivated if they know the aircrews are also taking care of their aircraft. Often, I hear complaints of filthy airplanes, but this month, I heard a lot of accolades about **N98426/KEWN**. Good job to **Capt Brain 'Bear' Mouat and the folks out at NC-160**. →→

**3d. Survival Kit Expiration Dates:** Please check your aircraft kits during this monthly inspection. They should need repacking in July 2022, but I just found one due in June 2021. Bring it to 8 May Operations meeting for repackaging.

**3e. Repeat Write-ups:** Sometime information is preprinted from previous Riveting Readings as the message is not getting out. Please read and head.

**3e1. G-1000 Displays are not Touchscreens Despite all the Fingerprints:** *"The **G1000 series** has a special anti-reflective coating found on many other Garmin products that is "very sensitive to skin oils, waxes and abrasive cleaners. Cleaners containing ammonia will harm the anti-reflective coating," the company advised on the G1000NXi support page. Disinfecting solutions of 70 percent isopropyl alcohol are acceptable and provide the "best combination of bactericidal effectiveness and equipment safety" as long as they don't contain ammonia. The surface must remain wet for at least 30 seconds, Garmin notes."* <https://www.aopa.org/news-and-media/all-news/2020/april/16/avionics-disinfectant-tips-from-the-pros> →→



**3e2. Recognize this?** Here is a hint: It's in all our G1000 aircraft. No, it's not an ejection button, but rather the copilot (2)← →/Mission Scanner (3) transmit select switch. Because CAP equips their aircraft with 2 - 3 extra radios and 3 transmitting positions, both a second annunciator panel and a 'either/or' transmit select button are needed. So, **if the copilot position doesn't seem to transmit**, make sure this Eaton switch is **on Seat 2, not on seat 3**. →→

**3f. Quiz Time:** Why does Frosty go, 'Thumpity thump thump, thumpity thump thump'? Answer: Because he was taxiing after he landed with his feet on the brakes. Please keep heels on the floor. (Right) a tire worn down to steel belts—it was only in service for a few months since the last time.



**3g. Pilot Tip of the Month:** (Courtesy of Ryan McBride) The tablet application Foreflight, which CAP now pays for its pilots, is a tremendous flight planning & inflight tool. Learn how to use more of its capabilities through videos on both its website <https://www.foreflight.com/support/video-library/watch/?list=courses-webinars> & YouTube.com.

**4.** Thank you all for the support & taking the time to read this. Riveting Reading is available on the Wing website (NCWGCAP.org) under 'Members/Operations/Aircraft Maintenance.' For questions, call 703-732-3264. →→

*- Stryker -*

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2 Attachments

1. FAA Advisory Directive (AD) Tracking
2. Weight & Balance: Do You Even Know that You're Lying?

**NCWG Riveting Reading – May 2021 – Vol #42  
Attachment 1**

**NCWG Fleet Compliance with recent Advisory Directives (ADs)**

**AD 2020-18-01:** Cracks found in the lower area of the forward cabin doorpost bulkhead. This AD requires repetitively (every 36 months) inspecting the lower area of the forward cabin doorposts at the strut attach fitting for cracks and repairing any cracks.

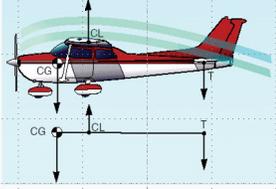
Status	Tail No	Year	Model	Based	Plan	Remarks
Open	N9930E	1985	C-182R	KRWI	Failed AD inspection	Retired at KSUT; off NCWG in ORMS
Open	N4813C	1986	C-172P	KFAY	Evaluated at KSUT	Due again in Mar 2024
Open	N98426	1986	C-172P	KEWN	Evaluated at KSUT	Due again in Apr Mar
Closed	N99832	1986	C-172P	KINT	Evaluated at KAVL	Due again in Feb 2024
Closed	N99885	1986	C-172P	KAVL	Evaluated at KAVL	Due again in Jan 2024

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Attachment 2

**Weight and Balance: Do You Even Know That You're Lying?**

Even the most conscience of us are probably under-reporting what goes into an aircraft when calculating the Weight and Balance (W&B). Unlike the United States Postal Service Priority Boxes, just because it fits, doesn't mean it ships. Here are several areas when we're probably using alternate facts when it comes to weight.

As a quick W&B reminder; here are the Mission Scanner, P-2018 slides:

 <h3>Weight and Balance</h3>  <ul style="list-style-type: none"><li>□ The wings generate a limited amount of lift</li><li>□ Maximum weight for an aircraft is set by the manufacturer</li><li>□ Pitch stability is affected by the location of the center of gravity (C.G.)</li><li>□ The pilot computes weight and balance and controls it by loading the aircraft correctly</li></ul>	 <h3>Weight and Balance</h3> <ul style="list-style-type: none"><li>□ Excessive weight adversely impacts performance:<ul style="list-style-type: none"><li>• Longer take off and landing distance</li><li>• Reduced climb performance</li><li>• Reduced ability to withstand turbulence and wind shear forces</li></ul></li><li>□ Out of Forward C.G. limits can cause:<ul style="list-style-type: none"><li>• Reduced up-elevator authority (ability to raise the nose)</li><li>• Can eliminate the ability to flare for landing</li></ul></li><li>□ Out of Rear C.G. limits can cause:<ul style="list-style-type: none"><li>• Reduced down-elevator authority (ability to lower the nose)</li><li>• <b>Can make stall recovery difficult or impossible</b></li></ul></li></ul>
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The aircraft's basic empty weight includes the airplane, oil, unusable fuel & tow-bar. It may include the Pilot Operating Handbook, but it probably doesn't include all the other books on board: G1000 manual, and various stuff stuck in the pockets, cowling plugs, lockbox, pitot cover, fuel stick & strainer. Honestly, that stuff is minutia; probably less than 8 pounds. Below is where the unreported weight really gets heavy.

**Pilot and Aircrew:** CAP's online W&B program (<https://paperlesswing.newgcap.org/pw/wb/>) automatically pulls CAP senior members' weights from what they report in e-Services. (E-services doesn't list cadet weights as Orientation pilots have learned.) But is that a *current weight*, a *former weight*, or a *desired weight*? And how was that weight determined? First thing in morning, sans clothes, or after lunch wearing full garments and shoes? Even the light weight corporate uniform (golf shirt, gray pants and sneakers) adds another 4+ pounds. Full BDU's and boots probably adds ten pounds. And what's in your pockets? A wallet, keys, pens, pocket change, and that mega cellphone? Add another 3+ pounds or weigh it out. It would be **safe to estimate each of us are under reporting 8-13#'s per crew member**. And we didn't even mention jackets. A Gortex jacket and liner are pretty light: ~2#. My leather jacket weighs 5#.

**And are your hands free?** I've seen some flight bags the size & weight of bowling ball bags. Within two pounds, can you accurately state how much your flight bag weighs? Speaking of two pounds; that's the weight of each 16 oz, thin plastic water bottle. And even after you drink it, that water is still in the airplane. When calculating the W&B, do you even add in the multiple flight bags, and other stuff you carry?

**Junk in the Trunk:** CAP, who provides you the airplane to fly, also makes you take some stuff along. That survival kit, in the orange pelican case – 10#. The boat cushion, 1#. Tie-down kit, travel chocks, two headsets, cleaning supplies, oil, funnel, tire gauge, and now even a ladder add up. We've weighed and built 40#s into the on-line W&B calculator. It doesn't mean you can just add more stuff without updating the weight calculation. Recently, we **found 62#s** of stuff in the back of an aircraft; not including the ~15#s of aircraft logs sitting on the back seat. Fortunately, it was a light, two-person crew, but their flight had ~200# less useful load than they thought. And sometimes, due to weight limitations, one needs to pull out the cargo box to stay within take-off or especially, landing limits.

Since the term 'Maximum Gross Weight' means just that, squadrons should look for ways to reduce the unnecessary items in an aircraft. Of course, local storage is key to safeguard equipment and supplies not needed for the flight; whether in a hangar, an office or a trunk. How many quarts of oil do you carry? Each quart weighs about two and a half pounds. Why have more than one or two? Some of our squadrons take out that seven-pound ladder because they have access to it near the airplane. How many avionics books and guides does your aircraft sport around? And if they are in the baggage compartment, the pilot can't access them anyway. Yes, you need the G1000 and POH within pilot's reach; but do you need to have the GNS-345R transponder or other manuals handy? Same goes for cleaning supplies; how many water bottles are in the plastic containers? Why not just use the rest of that water bottle you took on board to drink to wipe down the wings. And no, please don't use leftover soda, nor Gatorade for that. That blue and black gym bag of aircraft documents weigh another 10-15 pounds. Does it need to be in the airplane except when going to/from maintenance?

**'B' is for Balance:** Don't forget about where the weight goes is important too. Placing the heaviest stuff on the rear shelf of the baggage compartment won't show up on our on-line W&B program, but 'physics' rules. If you have to carry something, can you put some of the heavier stuff under the rear seat without damaging wires and such? A good example is a new practice of the crew chiefs on our C-172/G1000. N726CP (Betty) has the least useful load & rearward most CG aircraft of all NCWG aircraft. They've learned to relocate the baggage area contents to the copilot seat when snow is expected. This way, they don't have to run to the airport when that pile of frozen water sits the aircraft on its tail.

**What you can do:** First, be honest with your clothed weight in e-services. One can update their weight while doing the weight and balance. But if a crew-mate does the paperwork, how would they know? I would suspect we'll start having tow bar induced, accident reports if we question our aircrews on their weight or make them step on a scale. Also, look in the aircraft and remove redundant stuff; headsets, water bottles, manuals rags and especially chocks. While we provided travel chocks, some aircraft carry several sets of big clunky wooden or rubber ones. I've made PVC wrap-around chocks that weigh nearly nothing. Extra discomfort bags are worth their weight, but how many other items are clogging up the seatbacks or cargo area? Getting local storage by the aircraft is probably the best investment you can make; but it's easier said than done. And of course, that following up on that New Years' resolution might be helpful for some of us too. Let's make our useful load useful... and accurate. →→→→