

**“Riveting Reading”**

**Civil Air Patrol  
North Carolina Wing  
Aircraft Maintenance**

**Mar 1, '20. Vol #28**  
*By Major Martin ‘Stryker’ Heller*



Col R. Jason Bailey meeting with U.S. Army Controllers on one of his AOB missions. He earned his TMP, instrument rating & started MP training during his NCWG command.

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

**1. Motivational Quote:** “You’ll never change your life, until you change something you do daily. The secret of your success is found in your daily routine. **‘John C. Maxwell.’**”

**2. February highlights:** The month opened with four days of AOB mission flying, totaling 45 sorties as weather stopped a few missions. Four days later, some of us met at the NCWG Annual Conference, in Greensboro, exchanged continuity and watched the Wing Commander change of Command Ceremony. In February, **NCWG flew ~400 Hours**, with <16 aircraft, since **N4813C** hasn’t returned to service, seven aircraft were in for annuals, one had a magneto SB grounding, and a host of nit-noid failures you’re about to read. **Top hour earners were KINT (both N405CV & N99832), KBUY (N262CP), KJQF (N716CP), KFAY (N727CP) & KAVL (N99885).** All these aircraft **are projected in 35+ hour/month range**; but since this report was tallied before all sorties closed, the top hour earner wasn’t yet known.

**3a. Maintenance Month in Review:** Another Magneto issue has surfaced. What was a 4-cylinder engine issue last year, now basically **affects all slick magnetos [SB2-19A]** (read: possibly all NCWG airplanes). This Service Bulletin involves the impulse coupling stop pin length. If it’s too short, it can fall back into the engine, causing big damage. In layman’s terms, when small things break off into gears, bigger pieces break off, and the destruction cycle continues. So now maintenance is checking every aircraft’s magneto serial numbers and measuring/replacing impulse coupling stop pins where needed. If affected, the magneto goes to Florida for rebuilt. NHQ CAP put out more technical info if you need to see it. Official tracking is in AMRAD and repeated in attachment 1.

**3b. More Breaking News:** And by breaking, we mean our newest C-172’s rear window because the ladder wasn’t secured. **N726CP**, barely home from its two-month elevator replacement hiatus, had its’ rear window cracked, from a ladder left on top of the net. We have new smaller plastic bins for our C-172s; (29-quart box for liquid stuff, & the 15-quart box for dry supplies—even fits on the back shelf). [But if you keep it there, update the weight and balance since its further back.] We’ll provide them for all our C-172 airplanes, even those who changed theirs out. It will be a lot easier to keep a ladder underneath the cargo netting so this doesn’t happen again. Seems we couldn’t learn someone else’s lesson....



(Left) N726CP’s Plexiglas broken; awaiting temporary gluing and then replacement when new window arrives. Aircrews report water issues in the baggage area now. (Right) New storage boxes.



3c. NCWG's heavy flying takes a toll on maintenance as the Army mission ran **N963CP, N179CP, N7360C, N262CP, N938CP and N9930E** out of time. **N99885** followed a week later. **N437BA**, our glider, also had its annual in early February. That's seven, 100 hour/annuals within two-weeks. Here is the rundown:

**N963CP:** First in, second out; **'Gumby'** had a sticky #3 exhaust valve which got reamed. The right headset jack was replaced as was the avionics master switch (every 500 hours). Its right brake caliper was leaking so the system was rebuilt and re-bled. The left main tire and tube were replaced, as was the control yoke map light lamp. Because of its FLIR capability, **Gumby** was deployed directly to **KHLZ** for a real-world mission, when it came out of annual. (Gumby tail swapped with Max since **N938CP** was out of hours, and thus saved A9 funding.) **N938CP** returned home later in the week and is awaiting its name decals as does her sister ship, **N99885 'Echo.'**

**N179CP:** Second in, first out; **'Sandy'** also had a sticky valve, and needed a new battery. It had its airbag seatbelts de-activated (placarded) and will eventually be replaced with regular seatbelts (Se 3e below).

**N262CP:** **'George'** thought it needed a new backup artificial horizon. Just turns out that it is slow to get righted, in cold weather. The vacuum system was cleaned, had new filters installed and adjusted down into the normal 'green' range. All 12 spark plugs needed replacing which is why starting was hard. Magnetos were inspected (ref 3a above) and re-timed. Also, the pilot side glare shield (a.k.a. Rosen) had some hardware replaced. **N262CP** went home to KBUY on Valentine's Day.

**N938CP:** **'Max's'** 100-hour/annual included two new main tires, magneto adjustment, an Eaton switch lamp replacement on the instrument panel and a bi-annual IFR certification. The airplane also returned home on Valentine's Day as part of a tail swap that brought **N9930E to KSUT**. It also allowed **N963CP** to return to **KAVL** from FLIR duty at KLHZ, where it got its **'Gumby'** got its first FLIR Find on 22 Feb.

**N7360C:** **'Lola,'** among other things, now has nice looking legs again, as the landing gear struts and tires were re-painted. Parts were stripped down to bare metal, re-primed and painted; and the quality shows. The nose wheel was also re-shimmed and received new hardware. Also, the rudder trim re-aligned, cowl flaps touched up, removed a bird's nest from the horizontal stabilizer and repaired loose headliner material. Besides, the normal engine stuff, they adjusted proper governor for max RPM. They replaced (and charged us) for a cabin bulb; ironic, since its known as a courtesy light.



(Left) N7360C's left main gear repainted. (Right) The nose wheel support strut was removed and repainted at the local paint booth. Not shown is some blood from a sharp piece of aluminum up in the wheel well. (Both burr & blood removed.)



**Lola** also had her windscreen re-sealed; the abnormal engine gauge readings were due in part to water getting into the Air Data computer under the instrument panel. The Air Data computer was dried out, and a drip-shield installed on top. The bottom of the windscreen was re-sealed for good measure. **Lola** was retaining water and we noticed fluids dripping from her belly while seating on the ramp. Upon the post, inspection engine run, the starter failed, so **N7360C** stayed at KSUT a few more days until the new

starter arrived. She went home to **KLHZ** on 22 Feb. For a 1977 aircraft, **Lola** is in showroom condition—see for yourselves. CAP has 39 C-206's; 25 of which are Turbo-charged. NCWG's C-U206G is tied for the 2<sup>nd</sup> oldest, C-U206 in CAP's fleet. California (CAWG) has a 1972 C-U206F model, and a 1977 C-U206G model with more than double (maybe triple) the Total Time on Air Frame (TTAF) hours of '**Lola**.'

**N9930E:** The TDFM 136 FM radio and some of its wiring needed replacing; nose wheel strut re-shimmied and repainted. Pilot complaints of right wheel vibration couldn't be duplicated. Left wheel replaced due to flat spot. Battery replaced since it was at 66% capacity. A dual, USB plug was added so aircrews could power their devices in this non-G1000 aircraft. The seat tracks became an issue because the pilot seat wasn't latching (there has been an A.D. on that). Turns out the tracks aren't aligned so the seat needed to be twisted to latch. New seat tracks are being ordered, delaying its return about a week.



**N99885:** '**Echo**' also had its landing gear stripped and repainted. There are only so many times one could re-touch up paint before it peels in chunks. **Echo's** problem with the mission scanner push-to-talk button turned out to be an annunciator panel limitation in the 'adding on to an add on' radio capability. The shop spent time cleaning up some overzealous sealant on the left wing and re-sealed the bottom of the windscreen. The #1 KX-155 comm/nav radio had digital readout issues and was replaced. **N99885** was supposed to go home on 28 Feb, but the Directional Gyro failed on post inspection run-up, and gets to stay a few more days awaiting the replacement.

**N437BA:** Our Wing glider received its annual, an ADS-B out installation (← biggie), and a new cover. Some might have noticed N366BA, another glider at KLHZ. It's VAWG's; also getting its annual. That glider was air-towed, 81 NM from its home at Merlin Aerodrome, VA (2VA3); 15NM north of Blackstone Army Airfield. CAP actually has 54 gliders; 34 Blanik L-23s including NCWG's; 15 Schweizer 2-33 variants, and 5 Schleicher ASK 21s. "Oh, the places you'll go" in AMRAD.

**N4813C:** "**Frank**" at Winder, Georgia (KWDR) since New Year's Day, received an engine transplant from another CAP's C-172. **N4813C** had its propeller overhauled, an annual inspection, IFR certification, corrosion proofing and some minor repairs. Those included exchanging the intermittent GNS-430, resealing the real windows, some cowling fasteners and touch-up paint. NHQ directed the magnetos be sent off for inspection (ref 3A above). Hopefully, **N4813C** will be back before the AOB mission starts.

**3d. More Maintenance Actions:** **N727CP**, **N99885** and **N405CV** had oil changes. **N405CV** also complied with AD 15-09-17 involving fuel injector lines. **N908CP's** #2 CDI was noted inoperable; my guess that it's been that way a while. Probably it's just a wire disconnect since the "To/From" and 'off flag' still work. That issue is deferred until its next annual. **N99832** also had a digital failure on its KX-155 comm radio. The replacement has already been shipped and will be installed at its next 100-hour inspection next week. **N727CP** had auto-pilot issues, forcing pilots to actually fly the airplane. I'm sure I'll hear from the NCWG CAP Pilot's union about that one. **N716CP** has had intermittent traffic display issues but information available through blue tooth. A GTX-345 software version update might resolve the issue, once the airplane comes in for 100-hour maintenance. **N938CP's** magneto shaft bent upon removal for inspection. Hence a trip to Florida for its repair.

**3e. Airbags removal:** Due to spiraling maintenance costs on the airbags, to include limited service life replacements, NHQ has decided to remove the airbags at that point. More details to follow, but I can tell you we've had several test component failures that costs lots to replace and ground our aircraft.

**3f. Too Good an Improvement:** N99885's new LED replacement beacon bulb is so bright that not only does it reflect into the cockpit at night, but other airplanes are now pulling over to the right side of the airway to let 'Echo' pass. During its annual, maintenance painted the beacon light lens to block light.

**3g. No Biz, like Snow Biz:** (Lesson Learned) The 20 Feb storm dropped a few inches of wet (read: Heavy) snow at KRDU. The extra weight put N726CP on its tail. Yes, the new elevator did touch the ground, but the tie-down ring took most of the hit. **Capt Don Williams, NC-048/DO**, responded to the FBO call, cleaned off 'Betty's' tail and put cushioning (milk crate & foam) on the tail tie-down ring in case it happened again. (Photos below). He also moved as much weight from the baggage area to the front seat floorboards as possible. That 40# shift moved the CG forward ~2.5 inches, requiring much more weight on the tail to topple it again. FYI: The newer C-172R & S models are more tail heavy than the C-172P because of avionics aft of the baggage area. Besides the weight shift, all crew chiefs might want to test what they have for tail stands, whether milk crates, traffic cones, the onboard fuel ladder, or a combination of stuff. Ideas are welcome and we'll pass them along.



#### **4. Aviation Maintenance Support Information:**

**4a. GPS database next cycle (2003) was Feb 26<sup>th</sup>;** friendly reminder (though it doesn't sound friendly.)

**4b. Aeronautical Information File (AIF) Updates:** (repeat) NHQ's AIF page; last update as 23 Apr 2019.  
<https://www.gocivilairpatrol.com/programs/emergency-services/aircraft-operations/aif/aif-airplanes-balloons>

**4c. New Flight Check Criteria & Procedures:** A new CAPR 70-1 becomes effective; 30 March 2020. Here is an advance copy link: <https://www.gocivilairpatrol.com/members/publications/regulations-for-preview>

Many changes; ORM→ Risk Assessment (RA) Worksheets (RAM); Form # changes, and more clarity in some areas. Para 9.1.5: **Maintenance Officers (& crew chiefs) will need to keep an SD card in the top right slot of the G1000 (except when doing GPS database updates).** (SD cards will be distributed.) Pilots will need to check their G1000 aircraft are logging data as part of the pre-taxi (?) check (under Aux-Utility) tab; else an AMRAD discrepancy. You probably want to review these 'new & improved' 37-pages.

**4d. 2020 CO Detectors:** This year's cockpit companions were either installed at KSUT (7) or handed out at the NCWG Annual Conference. Only N741CP needed to be mailed. Remember to update AMRAD Aircraft Maintenance Data; **there are 3 airplanes**, (plus N4813C --out of state) that don't show current.

**4e. NCWG Crew Chief listing:** We track who are crew chiefs are via NCWGCAP's Operations/ Aircraft Maintenance webpage & recently updated all inputs. Advise if we missed something.

**4f. Barf Bag Update:** Based on the recent, unfortunate container failures, some crew chiefs recommend, 'Freezer quality,' gallon size, Ziploc storage bags. Others who try to avoid a passenger 'show and tell,' recommend coffee bean bags. As in most things, integrity is the key; & time the enemy.

**4g. Used CAP Airplanes for Sale:** NHQ periodically sells off, older flying (or otherwise as noted) aircraft. Here is their periodic announcement from February 14<sup>th</sup> (previously forwarded).

*We have several Cessna 172s, 182s and 206s we are offering for sale. CAP has contracted with Fresh Aircraft Sales to represent us and facilitate the sale of CAP aircraft. CAP will NOT have an auction for these aircraft. These aircraft are available for purchase TODAY! Please contact Fresh Aircraft Sales to make an offer; (602) 826-5286, (602) 717-2336 or [freshaircraft@gmail.com](mailto:freshaircraft@gmail.com). You can view the available aircraft on their site here: <https://www.freshaircraft.com/inventory/?/listings/aircraft/for-sale/list/category/6?etid=1&pcid=1436457&dlr=1&lo=4> We have 11 additional aircraft that will be going up for sale in the next few weeks. Aircraft are being added to the sale list every day so please check back often!*

**4h. Airplane Names:** The NCWG aircraft naming committee; upon input from the squadron, has bestowed the following names: N405CV → “Loki” (Norse G-D of Mischief) and N99832 → “Spartacus.” N908CP, N727CP, N716CP and N741CP aircraft names are still being considered.

**5. 2020 NCWG Conference Recap:** The Maintenance SCAT brief covered current issues, and a run-down of the various Emergency Services equipment in our fleet. Some crew chiefs were also recognized for their efforts. The briefing can be found on the [NCWGCAP.org/operations/aircraft maintenance/Riveting Reading](http://NCWGCAP.org/operations/aircraft_maintenance/Riveting_Reading) webpage. The 2019 NCWG Conference, **Crew Chief 201 briefing** has also been updated incorporating the WMIRS→AMRAD changes.

**6. Radio Callsign Quiz:** It’s almost been two years since we covered the information in attachment 2.

**7.** Thank you all for the support & for taking the time to read this. Riveting Reading can also be found on the NCWG Operations / Aircrew Maintenance Webpage. If you have questions, call 703-732-3264.

*- Stryker -*

Martin Heller, Major, CAP  
NCWG Aircraft Maintenance Officer

## Riveting Reading, March 1, 2020, Vol 28.

Attachment 1 – NCWG Fleet Status ref: Champion/Slick Service Bulletin SB2-19

Status	Category	TailNo	Year	CAP Acft Tbl_Model	Tach Time to next mx (as of 18 Feb)	Based	Plan	Rt Mag remarks
Done	Cat 1	N4813C	1985	172P	at mx in Georgia	KFAY	Sent for repair	AMRAD current
	Cat 1	N726CP	2015	172S	25 hrs-oil	KRDU	when due for annual	AMRAD empty
Closed	Cat 1	N7360C	1977	U206G	at mx	KLHZ	Done w/ 100-hour	AMRAD updated
	Cat 1	N908CP	1999	172S	30 hrs -ann	KILM	when due for annual	AMRAD empty
	Cat 1	N98426	1985	172P	13 hrs - oil	KRWI	when due for oil	AMRAD empty
	Cat 1	N9930E	1985	182R	at mx	KIXA	undergoing now	AMRAD empty
	Cat 1	N99832	1985	172P	14 hrs - annual	KINT	arriving ~ 1 March	AMRAD empty
Closed	Cat 1	N99885	1986	172P	at mx	KAVL	Done w/ Feb 100hr	Data in AMRAD
Closed	Cat 2	N179CP	2012	182T	50 hrs-oil	KSUT	Done w/ Feb 100hr	Data in AMRAD
Closed	Cat 2	N262CP	2017	182T	43 hrs-oil	KBUY	Done w/ Feb 100hr ck when bring	Data in AMRAD
	Cat 2	N405CV	2016	182T	34 hrs-ann	KINT	N99885	AMRAD empty
	Cat 2	N716CP	2005	182T	20 hrs-ann	KJQF	check at 100-hour	AMRAD empty
Closed	Cat 2	N727CP	2010	182T	34 hrs-ann	KFAY	Checked okay; New eng in March	awaiting eng change
	Cat 2	N741CP	2006	182T	21 hrs - oil	KECG	Service at home	AMRAD empty
Closed	Cat 2	N819CP	2003	182T	26 hrs - ann	KSVH	Checked at home	Fwdd to AMRAD
	Cat 2	N938CP	2015	182T	42 hrs - oil	KLHZ	Sent for repair	AMRAD updated
Closed	Cat 2	N963CP	2007	182T	38 hrs - oil	KAVL	Info obtained; Over- haul fac confirmed	in AMRAD current

As of: 28-Feb-20

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### Attachment 2 - Quiz on FM Radio Operations

1) You are flying along, dutifully monitoring Air 2 and Guard 1 on the FM radio.

What frequencies are you tuned to?

- a) I don't know; the frequencies are channelized in the aircraft, and on the radio info in AIF Tab 7.
- b) Air 2 is channel 4, Guard is a toggle choice between CAPGuard (G1) (150.225) & Tac 1 (G2).
- c) One could also be monitoring Air 2 on channel 11 (2P), which is digital
- d) All of the above

2) You get a call from the North Carolina Wing Director of Operations, his call-sign is:

- a) Ops 1   b) Longleaf Ops   c) Longleaf 06   d) Longleaf 74   e) Longleaf 007

3) Longleaf 1 is the NCWG Commander. Middle East Region & Nat'l HQ Commander's call-signs are:

- a) Arabian Sand 1 and Blue Sky 1
- b) CAPSTONE 1 and CAPicorn 1
- c) Can't answer since CAP callsigns are For Official Use only (FOUO)
- d) Middle East 1 and Red Sky 1

4) The FM radio doesn't want to transmit. It powers up but isn't going out. The probable reason is:

- a) You haven't made the right selection in the annunciation panel.
- b) You have the MO/Rear seat (2/3) transmit switch for the wrong seat
- c) There is a VIPER radio in the airplane and you have the FM/Comm switch in the 'Comm' position.
- d) Some of the above

5) The National Operations Center (NOC) needs to talk to your aircraft. They would reach you by:

- a) Getting an FM message on Guard 1 or Air 2 from "Avenging Spirit"
- b) Wouldn't happen, FM nor VHF doesn't reach several states away
- c) The NOC wouldn't go direct to aircraft, but work through the Wing.
- d) All of the above

6) You're supporting SAR operations in the region. Match the adjoining states callsigns:

- |                     |                |                   |
|---------------------|----------------|-------------------|
| 1) South Carolina   | a. Mud Bug     | g. Diamond Flight |
| 2) Virginia         | b. Skyline     | h. Jefferson      |
| 3) West Virginia    | c. Monuments   | i. CAPSTONE       |
| 4) Delaware         | d. Corporate   | J. Moonshine      |
| 5) Maryland         | e. Sand Lapper |                   |
| 6) National Capital | f. Free State  |                   |

7. You're waiting out weather & decided to find the list of CAP voice call-signs. On-line you learn:

- a) They are available through the CAPNHQ homepage on the Communications link (below the WMIRS link) buried in a library under the general information tab.
- b) Googling CAP voice call sign list will also get you this information
- c) Some Wings have FOUO information available without password protection
- d) All of the above.

(Answers: 1D, 2C, 3D, 4D, 5D, 6 1:e, 2:h, 3:b, 4:g 5:f 6:c a=Louisiana d=made up j=Kentucky, 7D)