NARCA Eagle

Volume 2016-07
July 2016

North Alabama
Radio Control Association
P.O. Box 173
Harvest, AL 35749
http://www.flynarca.com

Next Meeting

Place: Epps Airpark, Harvest
Date: Thursday July 14, 2016
Time: 6:30 PM
Program: TBA

Upcoming Club Events

July 9 – Monthly Aerotow, Epps Airpark

Eagle Droppings From the President:

I hope everyone is reading Don's articles on how to set up your airplanes. There is a huge amount of information in them and even if you don't follow his directions you are going to learn a LOT about how an airplane works. Quite frankly those articles are worth your annual dues so take advantage of them.

Past member Dick Novak had some major health problems a couple of years ago and is feeling much better now. However, he doesn't feel he will ever be able to fly again so he is selling his planes and equipment. He has a bunch of electrics available many of which are of unusual design. You can reach him at 256-520-8371 if you think you may have interest in anything. Dick is an interesting guy and has some great stories about Vietnam era aviation.

We've been getting some pretty fair turnouts at flying sessions despite the arrival of weather so hot the bugs don't even like it. Remember Larry's advice from last year and use sunblock and a hat. While we're talking about safety I have cleared off the zero line and pilot line markers so they are easier to see. Please use them.

I have found a local guy who does T-shirts. I'll try and have a sample at the meeting. Prices should be much less than Cafe Press. I have also found a local merchant who custom cuts vinyl if you need markings. I don't have pricing info on that one since each job will be different. Get in touch with me if you care.

That's about all I can come up with this month. Please read the lawn mower blurb, especially if you are one of the people who uses them. ✈

Rick Nelson, President

Membership (Second Vote) July 2016 Meeting

- Bic Green, Rick Nelson sponsor
- Don Apostolico, Tim Batt sponsor

9 June 2016 General Meeting Minutes

Meeting called to order by President Rick Nelson at the NARCA flying site (Epps Airpark). Thirteen persons in attendance.

Introduction of visitors and prospective members – Charles Hamley and Larry Shipman, both prospective members.

Minutes of previous NARCA General Meeting were approved as published in the NARCA Eagle Newsletter.

Officers' Reports

- Vice President – Tim Batt. Absent.
- Secretary – Archie Phillips. Retrieved mail on the way to meeting and distributed. No other items to report.
- Treasurer – Bob Stewart. A very slow month, only some dues for recently-added members have been received.
- President – Rick Nelson. Don Peck called and notified him that former NARCA member Al Kretz had won third place in the Masters Level R/C Scale at the Top Gun Meet.

Old Business

- **There was a second NARCA vote for Art Mansfield (Tim Batt sponsor).** Motion for full membership passed on written ballot (of course collected in the Marine hat). Welcome to Art as a NARCA member with full privileges.

- **Budget Amendment** – There was a typo in the NARCA FY 2016 budget passed at a previous meeting. Motion was made to amend the budget PASSED at the Mary 2016 meeting, but since there was not a quorum present a second vote of the membership was requires at this General Meeting. The motion was again passed and now the NARCA budget for this year can be executed with the revisions.

New Business

- **There was a first vote for Charles Hamley with Archie Phillips as his sponsor.** Accepted by voice vote. Welcome back to Charles as a NARCA introductory member.
- There was a first vote for Larry Shipman with Ron Johnson as his sponsor. Accepted by voice vote. Welcome to Ron as a NARCA introductory member.
- **There was discussion on the new path to the flying site.** There is now gravel for the road at the north end of the main runway but it is a very rough ride. Gary Sukow volunteered to bring his tractor to the field to smoothen the new gravel path.
- **It was note that one of the dogs owned by one of the field employees is aggressive and a dog bit has been reported.** So take care to avoid dogs at the field.

Meeting Adjourned at 7:45 PM.

There was no program presentation at this meeting. Presenters are needed. Archie provided a status on the “five-dollar” airplane and solicited ideas on making a cowl for it (during the flight after the meeting the rudder and muffler fell off). ✈

Respectfully Submitted,
Archie Phillips, Secretary

Summertime Hazards

The sun is high, the temperature is high, UV's are high. That all makes for a lurking safety issue. We all overlook the silent threats and they sneak up and create some bad problems. We ignore dehydration signs until we are in trouble. A water jug is an essential part of the flight box during our summer. Perspiration must be replaced with fluid. Thirst is a good indicator of the need to hydrate but don't count on it. Drink fluids. This addresses the issue of sun stroke. It's a killer. Drink and find shade!

More subtle but more dangerous in the long run are UVA and UVB. Ultra violet rays from the sun cause skin cancer. There are several types and I don't think we need a med school review. Some are irritants like basal cell and squamous cell carcinoma which can be easily treated if caught early. One is deadly. Melanoma only accounts for 3-5% of skin cancers but 75% of skin cancer deaths! Protection is easy! Forsake the healthy tan look. Hats, shirts and sunscreen. Yes sunscreen works. Used often 30% gets 97% of UVA and 50% gets 98%. Even a wide brim hat and 15% is a huge hedge of this killer that metastasizes quickly. I didn't run this by our flight surgeon (Bill Beasley) but I invite him to make additions or corrections as he sees fit. ✈

Fly Safely,
Larry Holcomb, Safety

When Mowing…

When the field is mowed there are a few things that aren't being done when the mowers are put away. Be sure to plug in the trickle chargers so the mowers will start next time, and shut off the fuel valve. I don't know if the tractor has one installed yet, but the small one has as does the pull behind. We purchased new gas cans a couple of years ago and since we feel no one is going to be smoking while using them we have disabled the safety features, meaning you can pour gas from them without a third arm and a pair of vise-grips. This also means the gas will evaporate out of them unless the nozzle is plugged. One of the plugs has gone missing (I'm looking for a replacement) but PLEASE use them. ✈

Rick

Don's Flight Tip #6

Electric, Gas or Glow Basic Sport Flight Trimming

Modelers have often told me that they aren't competition flyers therefore they don't trim their planes other than applying a click or 2 of aileron or elevator and consider the plane trimmed. I guess a counter analogy I would offer is flying an untrimmed plane is like driving your car with under inflated tires, tires with different air pressures, bad shock absorbers and front end out of alignment. To keep the car going straight down the road the driver has to fight the car by holding the steering wheel at the 2 o'clock position but that's ok because the driver is not an Indy 500 race car competitor. The point: You don't need to be a race car driver to insure your tire pressures are correct, your front end is in alignment and you have good shock absorbers. IE: You don't have to be a competition pilot to appreciate flying a properly setup and trimmed aircraft, so why fight it when you can fix it? It's a whole lot easier and fun to fly a trimmed plane than fight a crooked, out of trim aircraft.

When flying any electric, gas or glow aircraft there are basic flight trimming items that should be checked to insure a reasonable flying aircraft. Since most flyers fly sport aircraft the following narrative will provide an *abbreviated trim outline that can be used on any electric, gas or glow powered sport plane.* The challenge is knowing what to look for and what adjustments are appropriate to eliminate the problem.

Before the First Flight

Basic preflight checks identify a plane that may be crooked incorrect thrust line, incidence and other issues that make the plane impossible to trim correctly. Fix it before flying.

- *The first step is to insure a square trammeled aircraft, correct incidence angles and correct right thrust*. These subjects were covered in flight tip #2.
- *Control travels and linkages need to be properly set –* see flight tip 4 & 5.
- *CG needs to be checked and set.*

Test Flight

After takeoff and the trims are centered (this is where many modelers stop the adjustment process) your rate switches need to be checked to make sure you are comfortable with the high and low rates and exponential settings the manufacturer has recommended. If not these need to be adjusted to your liking. There are no right or wrong settings and these settings are starting points which will be tweaked while the trimming process continues. In other words if you move the CG back it will take less travel to get the same control results. Move the CG forward and you may need more deflection. Control response is a personal thing that you adjust to your liking. The settings are what feels good to you.

NOTE: Starting points for control travel guidelines for trai*ner/sport aircraft, up to a 120 size aircraft that have been used for decades is to set your full aileron deflection to do 3 rolls in 5-6 seconds. Set full elevator deflection to perform a loop of about 150 feet diameter. Adjust to your liking*.

- Next step is to ***select the prop*** that gives your plane the best performance. If you go thru the trim process and then change prop, size, pitch or diameter or change from a 2 to a 3 blade the right thrust will likely change which means that trim settings will likely need to be changed due to the new right thrust setting. Sometimes simply changing brands of props, even of the same size, will require a thrust line adjustment. Settle on your prop before proceeding to avoid wasting your trimming effort.
- The next thing to adjust if necessary is to ***adjust the CG*** to your liking. To check: Roll the plane into a steep bank turn (60-70º) and if the nose drops you may want to add

some weight to the tail. If the nose rises in a turn you may want to add weight to the nose.

- On a plane with symmetrical airfoil capable of sustained inverted flight roll the plane inverted. If it takes a lot of down elevator to hold the plane level add some tail weight to your liking. I set my aerobatic planes up with a very aft CG and it takes virtually no down elevator to fly the plane upside down and in an inverted 45 degree up line it takes no down elevator to draw a straight line. That's my personal preference so you adjust yours accordingly. With an aft CG, control travels are reduced and expo settings are increased but that's a personal thing that you will adjust to what you feel comfortable with.

Modelers who start adjusting various flight trim parameters before setting the CG are wasting their trimming time because anytime you change the CG your flight trim will change.

Rudder or Aileron Trim?

It is important to know which trim tab to adjust. Some flyers improperly use rudder trim to correct a rolling problem and vice versa. It's easy to tell what trim tab to adjust.

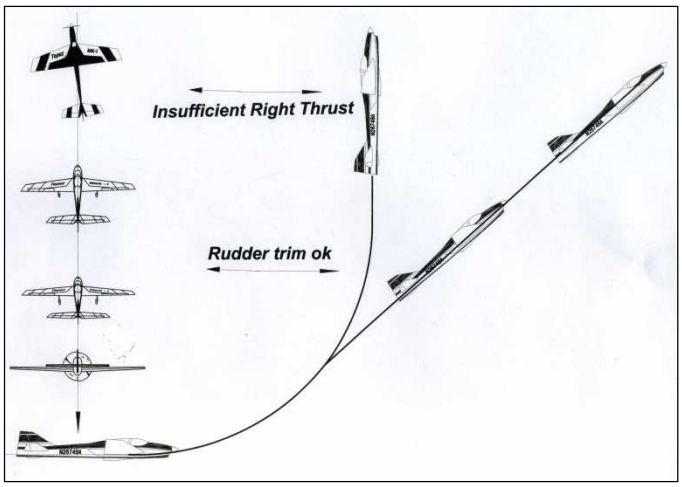
- *If the airplane rolls right while right side up and rolls right inverted then use aileron trim to adjust the turning tendency. (Advanced flight trimming checks for tip weight that can cause the heavy wing to fly low).*
- *If the plane goes right upright and left inverted adjust the rudder trim. Simple.*

Setting Right Thrust

After the cg is set on sport or trainer aircraft, the next item to set is right thrust. I've observed numerous trainer, sport and higher performance type planes at our flying field that have incorrect right thrust. If you watch a plane take off you can often see the nose swing left right after takeoff and in extreme cases see a wings level left with a right bank turn due to too little right thrust or in a climb the nose is pointed left while the modeler tries to keep the plane going straight with opposite aileron. *Failing to adjust the right thrust means you fight the plane every time you fly it for the lifespan of the plane when a few minutes on the workbench will alleviate the trim problem*. The fix is simple. Simply shim the motor or engine and add some right thrust. Most trainer sport planes use around 2-3 degrees of right thrust as a starting point.

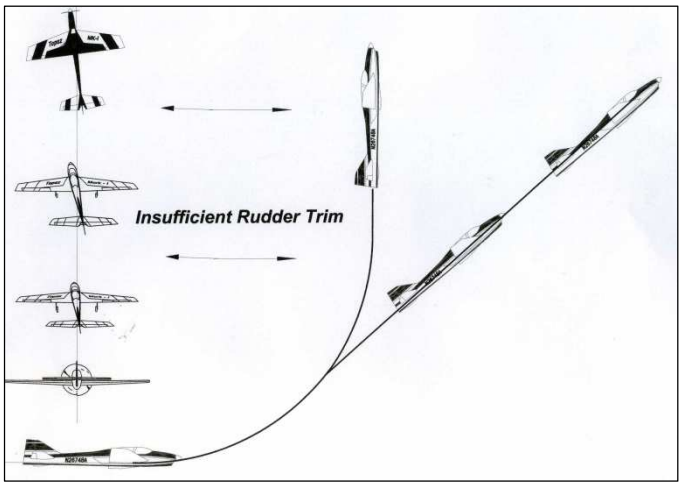
The test for right thrust is to fly straight and level and pull to a 45-90 degree vertical line and watch the plane while applying no control once the line has been established.

Note: While interactive the thrust line is the dominant force at lower speeds and the rudder is the dominant force at high speed.



Insufficient Right Thrust – Nose goes left as speed slows on the up line

Notice in the above diagram that the planes longitudinal axis goes straight for most of the up line but as the plane slows at the top the nose swings left. This plane needs more right thrust.



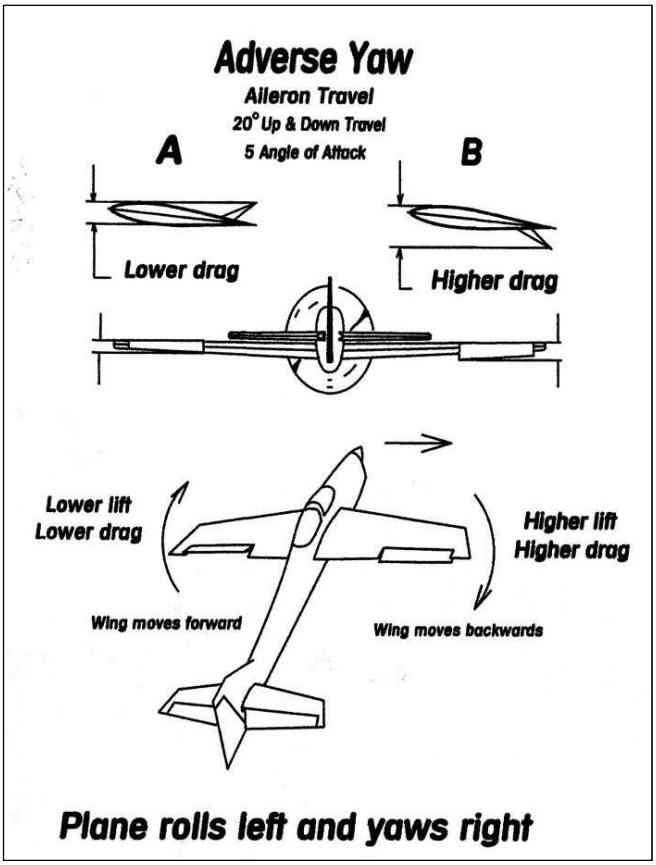
Insufficient Rudder Trim – Nose starts moving left on the high speed pitch up

Notice in the above diagram the longitudinal axis of the plane moves left, right after the pull to vertical. This plane needs right rudder trim to straighten the up line.

Adjusting Differential

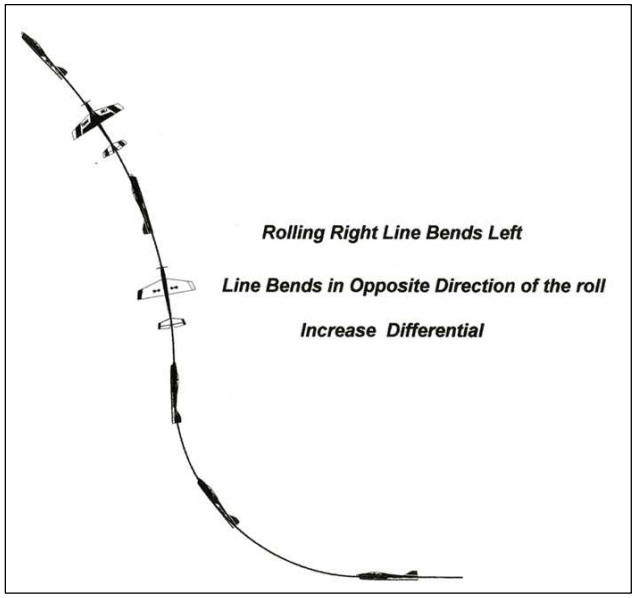
Differential is an adjustment that even a casual observer can tell if a pilot has not correctly set it. One can easily see that the plane *rolls **around** its longitudinal axis rather than rolling **on** its axis.* Differential is not difficult to adjust – *you just have to do it*. Most radios have a differential feature that is used to provide *more up aileron travel than down aileron travel to compensate for adverse yaw.*

Adverse yaw is caused when the downward moving aileron into the airstream creates more drag than the upward moving aileron moving out of the airstream. The effect is that the plane banks left and yaws right or vice versa. This trim anomaly makes planes look funky when they fly and causes the plane to barrel rol around its axis rather than roll on its axis.

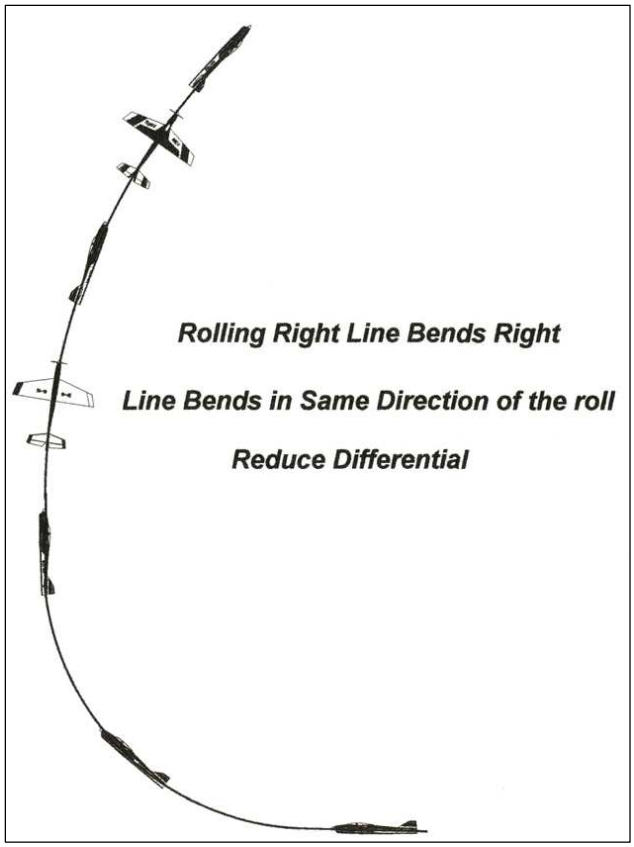


Flight Tests to Check Differential Trim

The flight test is simple to determine how much or how little differential is needed. *Simply pull the plane to a vertical line and apply full right or left aileron. If the vertical line bends in the opposite direction of the applied aileron add differential. If the line bends in the same direction as applied aileron reduce differential.* Every airplane is different. Add or remove whatever amount is necessary so when you pull the vertical line and apply full right or full left aileron the plane rolls straight up the line on its axis.



When line bends in opposite direction of roll-add differential



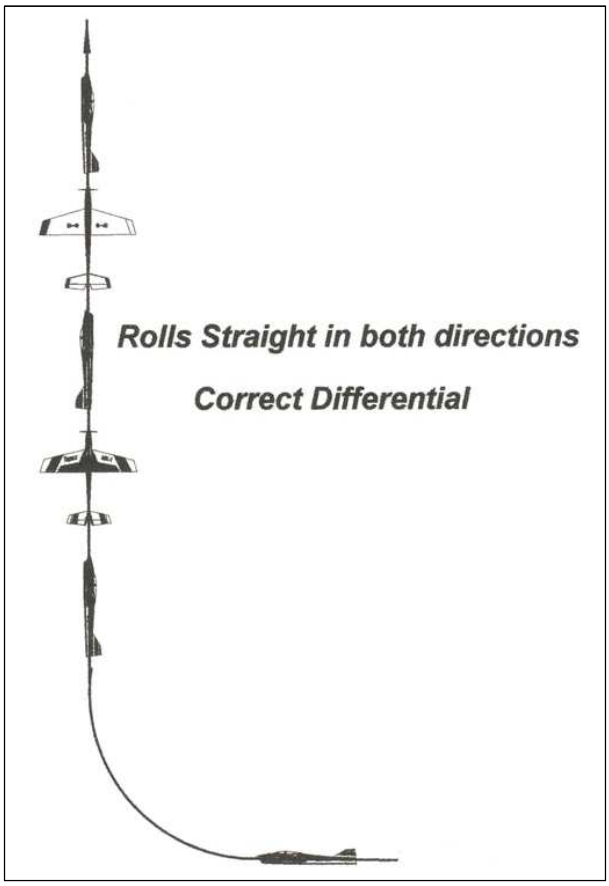
The plane shown in the above drawing has too much differential.

When line bends in same direction of roll- reduce differential.

Plane barrel rolls around its longitudinal axis when differential is improperly set

Plane rolls on its longitudinal axis when differential is properly set

Down elevator needs to be applied when inverted to keep the nose from dropping.



Plane rolls on its longitudinal axis when differential is properly set

The above narrative describes bare bones steps in flight trimming a sport, trainer type electric, gas or glow type plane. IE: Straight trammeled plane, control throws and trims, proper CG, correct prop selection and correct right thrust and differential.

Advanced Flight Trimming

For those who have an interest in advanced flight trimming there are 16 steps to accomplish this with the result being a beautiful flying aircraft that has trim anomalies nulled out. Flying an out of trim plane versus flying a trimmed plane is like going from a beat up old junk car to driving a BMW. Why not fly a BMW. All it takes is a little effort and time to dial in your plane. It's also fun and the pilot can't help but learn as you go thru the trimming process as one can easily observe cause and effect of the changes.

To accomplish this advanced trimming process takes up to about 50 flights and sometimes more if the plane has design trim or setup deficiencies, The reason why it takes so many flights is that you may trim the first 8 steps and adjust the 9th step. That adjustment may affect steps 4, 7 and 8. so you have to go back and check each step and readjust as necessary. These trim adjustments usually interact with other areas of the flight envelope so with 16 steps to adjust you can easily see it may take upwards of 50 flights to dial in a plane.

I use the term 50-100 flights in a broad sense. I suppose it is more accurate to say landings rather than flights. When trimming a plane I always have a helper. After take off the plane is tested for whatever step I'm on to identify the trim problem. This may take 30 seconds or a minute of flight time. As an example, it doesn't take 15 minutes of flying to determine that you have a rudder trim problem. After you make 2 or 3 pulls to the vertical and the plane goes left consistently on the pull up I land, the helper holds the plane with the engine running at idle and the radio trim is adjusted. Now take off to check the new setting and if it's ok, progress onto the next step. If not the plane is landed and more trim is added while the helper holds the plane with engine running. The coarse adjustments are fairly easy. It's when you get close but not quite right that the trim adjustments are tweaked by a degree at a time to get it right. There may be numerous landings and adjustments in one flight.

Advance trim procedures address up /down thrust, elevator alignment, (causes airplane to roll with elevator application) wing tip weight (causes heavy wing to drop when g loads are applied) proverse or adverse roll coupling with rudder application, (function of incorrect dihedral) up line trim, downline trim, (function of thrust line and aileron droop) aileron and elevator differential, (causes rolls to wobble and elevator differential causes unequal size inside and outside loops and is a function of vertical CG), decalage (angular difference between the wing and stab that cause up and downline trim issues), pitching to canopy or belly in knife edge flight, (function of CG placement) power on-power off trim, (function of up –down right thrust). Most of these trim items are inter active so one adjustment will often affect other trim issues which have to be rechecked and adjusted as necessary.

For those interested in more detail about advanced flight trimming check the club directory and contact me by phone email or text and I'll be glad to help.

I don't often fly untrimmed aircraft but when I do I tank up on my pain killers before the flight. 😐

It's so much more fun to fly a trimmed plane, *Why fight it when you can fix it?* Once you do you will not want to fly another untrimmed plane again.
Time to head to the fridge to see if I can find Rick's briefcase.

Until next time - Fly Safe. ✈

Visit to the Airline Museum History (AHM)

Kevin Reynolds

I recently traveled on business to Iowa, and after finishing up my work on June 10th, I had time to go by the AHM before my flight back to Nashville. Being an airliner buff, this was one thing on my bucket list; I missed an opportunity four years prior and I wasn't going to let that happen again! KC Downtown Airport Hangar 9 (the location, not the company!) was chock full of airplanes and related equipment. Everything from a JT8D pulled from a retired FedEx 727 used at KCI for firefighting training to a Jeep used by TWA at KC Downtown, International airports and at their Oklahoma maintenance complex.

I got a personal tour from Bob Glover, the President. The highlight of the tour was the Lockheed Constellation; I didn't realize just how big she is (perhaps her high stance on the landing gear contributes to that thought). Of particular interest to me due to my latest build was one of the few remaining Martin 4-0-4s left; most have been scrapped, I know of only five left. If you have a chance to go by and visit; this is a look, feel, touch, smell kind of place. Here are some pictures I took: