



EAA Chapter 478 Cockpit Chatter



February 2011

Cockpit Chatter is published monthly by EAA Chapter 478 solely for the dissemination of information and ideas to the membership. Any opinions expressed herein are strictly those of the author and do not necessarily reflect the opinions of the chapter or the Experimental Aircraft Association.

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Chapter Calendar

Note: There may be events that are scheduled or anticipated but that I am either not aware of, or for which the date(s) has not been finalized. Therefore, the calendar may not reflect all events.

February 2011			
Chapter Meeting	Tuesday, February 15 th	1900	Patuxent River Navel Air Museum
March 2011			
Board Meeting	Thursday, March 3 rd	1900	Nicolette's Restaurant
Chapter Meeting	Tuesday, March 15 th	1900	Patuxent River Navel Air Museum

Board Meeting	Thursday, April 7 th	1900	Nicolette's Restaurant
Chapter Meeting	Tuesday, April 19 th	1900	Patuxent River Naval Air Museum

Nicolette's Restaurant 22741 Three Notch Rd, California, MD 20619 301.863.2233;
[Directions](#) to Patuxent River Naval Air Museum

Chapter meetings are generally held the third Tuesday of each month. Board meetings are generally held the first Thursday of each month and are open to all Chapter 478 members. 22741 Three Notch Rd, California, MD 20619

Long Term Planning:

The chapter is planning to have a booth with the A-1 at Air Expo at Patuxent River on Labor Day Weekend with the A-1. Also note, the Young Eagles event that is usually in June will be held on done October 8th.

President's Corner (by Jeff Test)

G'day

Well Ol' Man Winter's icy grip is upon us, but that hasn't stopped some good flying days. I have managed to log over 25 hours in the last month. I have managed to get many landings, some night flying, and practice some actual aircraft problem management experience. The point is simply that with the flying experience I gained several other skills that I rarely have the opportunity to use while on the ground. This also goes to building. The time spent at the drill press, making fiberglass parts, wiring avionics has given improved skills in other areas that make better builders and pilots.

So this month's program is on LSA maintenance and all the tricks and snags that maintaining an LSA may involve. Sure you may have an Ercoupe, but what maintenance are you allowed to make? Be careful, the Ercoupe is a Certified Aircraft that also can be a LSA. This meeting will put some light on the maintenance questions of LSA.

On another note the board has voted to cancel the Udvar-Hazy bus trip. The reason was a general lack of member commitment to sign-up. Last year the trip was a small loss, but this year there were only 10 seats committed. If this trip is to be run the Chapter needs no less than 28 seats sold just to cover the bus costs. I will be happy to discuss during the meeting, but I do not wish to have the Chapter take a large loss on an activity even if it is fun.

I want to urge each member to again commit to assisting with the Chapter events. I have discovered my personal reward is greater when I actually take part and show up to events. We have a great group of members and many activities, come on out and expand your experiences and take the opportunity to learn something new.

Hope to see you at the meeting and at all the great events this year. It is going to be great fun!

Clear!

Jeff

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February Board Minutes (From Jeff Test)

EAA Chapter 478 Board Meeting

Date: 2 February 2011 (1900)

Location: Nicoletti's

1. BUS TRIP to the National Air and Space Museum Udvar-Hazy Center for 26 February does not look promising. Only 10 people have committed to going. Looks right now like it will be cancelled for lack of interest. Unless there is a groundswell of interest, very soon, there will not be a bus trip to the museum. Can't wait until the day of the trip...
2. DUES: There are 24 members of the chapter who have paid their dues. If you are not one of them, please join the group. Don will be at the Chapter meeting on the 15th and will be more than happy to accept your dues.
3. FLY-IN(S): There is a Fly-In at the military aviation museum in Virginia Beach 20-22 May. The airfield is only open twice a year to the general public. It promises to be a great time. Jeff Test has more info. There is also a Fly-in to Suffolk, VA 30 Apr-1 May. Jeff is planning on going and is trying to put together a group fly-in.
4. A-1 UPDATE: Talked about the September Centennial of Naval Aviation Air Expo. On 3&4 Sept. We will advertize for Young Eagles and plan to fly at St. Mary's on 10 Sept. The AIAA Symposium this year will feature the 100th Anniversary of Naval Aviation. Tom Weiss is writing a paper on the construction of the A-1 that he may present. We're currently

working cables. The center section is almost done. The tail will be next. Need gas tank and floats. There is a cable bracket working party on Saturday the 12th.

5. UNITED WAY: The area United Way Chapter Executive Board is considering our application and will decide by the end of February

6. NEXT CHAPT MTG 15 FEB: The presentation at the next Chapter meeting will be on Light Sport Aircraft. It promises to be very informative. The Chapter meeting in March may include a presentation by Jeff Test on flying to the different Virginia airports complete with pictures, etc.

7. BERNIE WUNDER: 1. We need articles for the Newsletter. Please try to come up with an article or two. 2. Bernie will talk to the Air Expo coordinator. We are trying to ensure that we have hanger space for the A-1. 3. The Young Eagles committee would like to sponsor a Young Eagle for the EAA Camp at Oshkosh this year.

8. DATES TO REMEMBER:

June 11th, Saturday - Ranch Club Young Eagles Flight

Sept 3 & 4 - Air Expo Pax River

Sept 10th - Young Eagles flight St. Mary's airport

March/April - Sun and Fun

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Guest Authors

This month we'll have the first of a three part series written by John Attebury chronicling his recent trip from Seattle to DC in a Cherokee. The trip required a total of 11 days and nearly 37 hours of Hobbs time. We'll run the second part of the story in March, followed by the third and final segment in April. For those of you who can't wait for the ending, John has autographed copies for \$35.00.

Thanks to Jeff and Matt for stepping up to write articles for the months of March??? and April???. I'd also like to thank others who have provide me with updates and photos of their builder projects.

Who would like to offer to write an article for the May newsletter?

So who wants to sign up? Please email me at jszelc@gmail.com if you would like to add your name to the list or if you have any question. You can also call me at 703.963.5889.

Month	Author	Topic (if known)
February 2011	John Attebury	Cross Country Flying - Washington to California to Virginia
March 2011	Jeff Test	One of a few good topics !
April 2011	Matt Jackson	The Challenges of Winter Time Composite Construction
May 2011	YOUR NAME HERE !	

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The Importance of V_A



FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: CE-11-17

Date: January 18, 2011

SUBJ: Instruments

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin informs you of an airworthiness concern that is relevant to all airplanes certificated under Title 14 of the Code of Federal Regulations (14 CFR) part 23, as well as those certificated under the previous Civil Air Regulations (CAR) part 3. This information is also relevant to any special light-sport category airplanes (S-LSA), experimental light-sport airplanes (E-LSA), and experimental amateur-built airplanes.

At this time, the Federal Aviation Administration (FAA) has determined that this airworthiness concern is not an unsafe condition that would warrant airworthiness directive (AD) action under 14 CFR part 39.

Background

On November 12, 2001, American Airlines Flight 587, crashed shortly after takeoff from New York's John F. Kennedy International Airport. The crash killed all 260 people aboard and 5 people on the ground. The National Transportation Safety Board (NTSB) determined "the probable cause of this accident was the in-flight separation of the vertical stabilizer as a result of the loads beyond ultimate design loads that were created by the first officer's unnecessary and excessive rudder pedal inputs." As a result of this accident and subsequent investigation, it was revealed that many pilots have a misunderstanding of what the design maneuvering velocity (speed), V_A , represents. Many pilots believe that as long as the airplane is at or below this maneuvering speed, they can make any control inputs they desire without any risk of harm to the airplane. This is not true.

The design maneuvering speed (V_A) is the speed below which you can move a single flight control, one time, to its full deflection, for one axis of airplane rotation only (pitch, roll or yaw), in smooth air, without risk of damage to the airplane.

Even though the accident discussed above is a part 25 airplane, V_A is applicable to part 23, CAR 3, and LSA airplanes. Also, even though experimental airplanes may not have a published V_A , they will still have some maximum maneuvering speed associated with the maximum structural design loads. Therefore, the pilot should be aware of what speed this is, and adhere to the guidance herein. The regulations governing the design strength requirements for airplane structure require adequate strength for full control deflection (below V_A). However, they do not require the manufacturer to make the airplane strong enough to withstand full control input followed by a full control input in the opposite direction, even below V_A . Neither do they require the manufacturer to design the airplane for more than one simultaneous full control input such as full ailerons with full elevator and/or rudder.

V_A , as published in the airplane flight manual (AFM) or pilot's operating handbook (POH), is valid for operation at the gross weight stated, which is typically at max gross weight. It is especially important to note that V_A decreases as the airplane weight decreases. At first, this may seem counter intuitive. All pilots understand that when the airplane is subjected to an external force, such as the aerodynamic force from a control surface, the airplane responds by accelerating (rotational acceleration) about one of the airplane's axes. This was stated many years ago in Newton's Second Law of Motion. The law states that when an object of mass 'm' is acted upon by a force 'F', it will undergo acceleration 'a' in the same direction as the force. More simply stated in the widely known equation " $F = ma$ ", which can be rewritten as " $a = F/m$ ". Rewritten this way, it is clear for a given control force 'F', as the airplane weight 'm' decreases then the acceleration 'a' will increase. This higher acceleration gives rise to higher loads on the airplane structure. Therefore, as the airplane weight decreases, the allowable maneuvering speed must also decrease, to ensure that the airframe is not damaged. Pilots may remember from their written exam that $V_{A-NEW} = V_A \sqrt{(W_{NEW}/W_{MAX-GROSS})}$ as the way to calculate the corrected (new) maneuvering speed due to operating at a weight less than the maximum gross weight. NOTE: This formula is for calculating the V_A change about the pitch axis; however, it can be used for all axes.

Recommendations

The FAA wants to clarify that operators should know what the maneuvering speed is and to caution pilots on what to avoid by adhering to the information described above and contained in the regulations. We recommend the following for maneuvering at, or even below, V_A :

- DO NOT apply a full deflection of a control, followed immediately by a full deflection in the opposite direction.
- DO NOT apply full multiple control inputs simultaneously; i.e., pitch, roll and yaw simultaneously, or in any combination thereof, even if you are below V_A .
- Reduce V_A when operating below gross weight, using the following formula:

$$V_{A-NEW} = V_A \sqrt{(W_{NEW}/W_{MAX-GROSS})}$$

For Further Information Contact

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Seattle to DC - The Adventure Begins (by John Attebury)

Part 1: As the song goes: "Let's Get This Party Started"

“Ice on the wing over here.” Not what you want to hear when you are in the clouds, watching ice form on the windshield. Mark had put the pitot heat on several minutes before we started our descent through the weather and I knew we had to break out shortly. We’d talked to Flight Service and listened to AWOS, but picking up the ground would sure be nice.



A view of Mt. Shasta and a Hersey Bar wing tip!

Some of you may remember my friend Mark, who has been kind enough to come down to CRE and perform VFR transponder checks on our aircraft. Mark is a former student of mine who got his private pilot certification out of the way last October. While Mark was pursuing his private pilot certificate, he was also searching for an airplane of his own. He settled on a rare Cherokee 140. The problem was that it was located out in Seattle, Washington. Mark asked if I could accompany him out to Seattle for a flight back to Virginia. Based on his

work schedule and all of the paperwork needed to purchase the airplane, the soonest he could leave for Seattle was the 14th of December. With a bit of luck, that would leave us plenty of time to complete the trip and make it home for Christmas with several weather days thrown in. But Mark was not naïve about Seattle’s winter weather. He knew that he might have to find hangar space out west and return for the airplane in the spring.

We left IAD on the 14th of Dec. for SEA. The owner picked us up at the airport and after a juicy hamburger in Seattle’s famous “Dick’s,” we proceeded up to Arlington, Washington, where Mark completed the final sale/title transfer on the airplane. I went straight to a sporting goods department for survival gear, which included a 12-gauge pump and a flare pistol. Then on to a food store for survival rations and water. Next came a few more warm clothes. We didn’t know if we would go east, over the Cascades through Snoqualmie Pass following I-90, or south toward California.

We waited a day in Seattle for a local flight orientation and better weather. Better weather never quite came. The Cascades and the pass were covered with clouds and fog, but flight service said if we could make it to the coast we would have good flying conditions heading south. So, the next morning, after the former owner led us in prayer for a safe trip, we angled over to the Pacific coast avoiding the Olympic Mountains. As we moved southwest, Olympic National Park was on our right and the snow-covered tops of Mt. Baker, Mt. Rainier, Mt. Adams and Mt. St. Helen's were visible to the east.

Reaching the coast, the flat river valleys feeding the Pacific finally set us at ease. We could see highway 101 and went south, to Newport, Oregon for fuel. Half a cup of coffee later we continued south along the coast until we could pick a course across the mountains through Southern Oregon and into Northern California. The mountain crossing was beautiful at 9500 feet, but offered few emergency-landing spots. We kept our eyes on logging roads and the occasional green valley. We passed a gorgeous Mt. Shasta and then down the Sacramento valley toward the Nut Tree Airport in Vacaville, CA. California had been experiencing heavy rain and we were impressed with the large fields of water wherever we looked. It took me a while to remember from my earlier years of flying out there, that these were all rice fields that had been flooded. It was starting to get dark when we finally picked up the AWOS at Nut Tree airport. The broadcast was reporting calm winds and no temperature dew point spread. The sun had just gone down and I saw the potential for everything in the area turning white with zero visibility. Luckily, the fog held off until after we landed and hangared the airplane with a full load of fuel for a morning departure. We headed for quarters with my 89-year-old friend, and WWII pilot, Duncan Miller. My Aviation Cadet classmate Lloyd Tincher loaned his Caddy to the stranded flyers, so we were in tall cotton.

March: Part 2 - I thought California always had Great weather for flying !

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Builder Updates

EA KR-2 Builder Report – Sid Wood

On January 4, 2011, I sat in the cockpit of N6242 for the first time in about ten years. More on that in a little bit. The instrument wiring was complete and fully connected to the aircraft. Batteries, both primary and backup, were on line. A battery charger was connected in lieu of the alternator operating. The Dynon D10A Primary Flight Display, Grand Rapids Engine Information System (EIS) and 14Point7 Mixture Meter were alive and well. The

auxiliary electric fuel pump made some noise and draws 0.7 amps, but no fuel in the system yet, so turned it off. Alternator/Charger load was 1.5 amps; ignition on jumps to 4.0 amps total. Radios draw 1.6 amp and jumps to 2.3 amps with PTT. Instructions on the electronic ignition, indicates electrical load will go to 6.0 amps at full throttle. Previous tests on the wingtip strobes have 2.3 amps each. So, total wide-open throttle electrical load would be about 13.7 amps. The alternator is rated for 20 amps. Since the landing lights draw 4.0 amps each, these will need to be judiciously used.

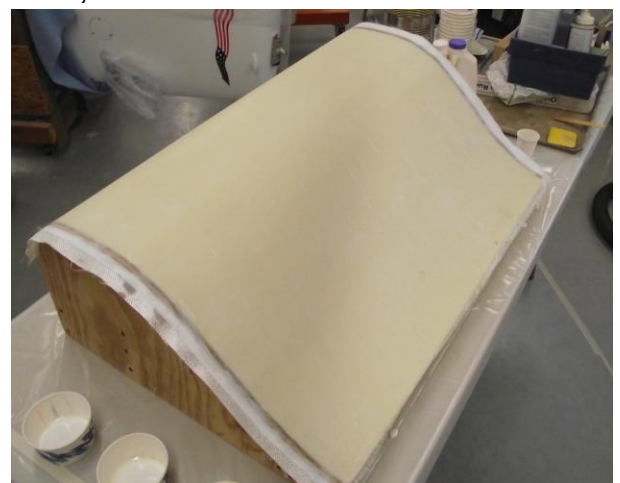


KR-2 N6242 Panel with all instruments installed.

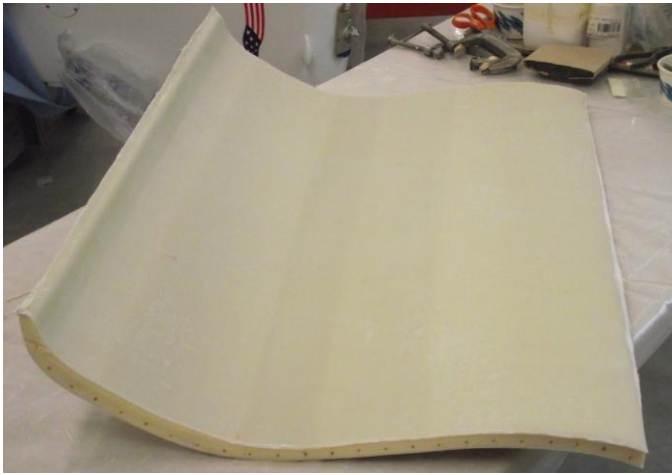
Just to get a feel for the seating without any cushions, I sat in the cockpit for about two hours, made airplane noises and two cell phone calls. The sling seat is usable, but reminds one of a hammock. The seat is a bit shaky stepping on the seat bottom getting in and out. I also noticed that the sling rubs on the aileron push rods when someone sits in the seat, either or both sides. So, how did the seat get to rubbing on the flight controls? I had previously modified the controls, going from a cable system to a pushrod system. That was to get clearance for the main gear brackets on

the rear of the spar. The geometry and clearances changed in the cockpit. This is the first time I had checked the modified flight controls and the seat together and with someone in the seat. I considered reworking the flight controls one more time. That was going to be a major operation. Conversely, the sling seat was now the offending item. A solid seat was preferred for better bottom and back support and would stay off the controls.

The methodology called out in the vendor plans for making wing surfaces was also used for the seat pan construction: Make plywood ribs the exact shape needed and fasten squarely in place with some 2x4 framing. I used two sets of ribs: one set for the top surface and one set for the bottom surface. Attach urethane foam between the ribs; I used screw nails instead of glue to facilitate removal. Sand the foam to the contour of the ribs and glass each side in turn. I put two BID of 9.8 oz fiberglass and West System epoxy on the bottom.



Seat Pan glassed 2 BID on the bottom



Top view of Glassed Seat Pan ready for fitting and trimming

After glassing the bottom, the bottom rib forms were replaced with the top rib forms. The foam was sanded to contour and then glassed with four BID on the top. The top would always see compression loading especially the middle of the pan where you step on it getting in and out of the cockpit. That footprint area has six BID. Darker shading to the left in the picture shows the extra BID.

Elevator push rod need to be cut. Mounting brackets will be added to front and rear for attachment to the front and rear spars.

So far, this exercise in seat re-building has set the schedule back one month and it looks like another two weeks will be needed to complete the seat. So it goes, one step forward, two steps back.

The seat pan needs to be trimmed to fit in the tapered cockpit. Holes for the Stick and

More next time.

EA KR-2 Builder Report – Stan Sweikar



for first flight early 2012.

Recently completed the battery and wiring installation for the Bendix Y-150 starter and MGL V10 transceiver. Battery used is a Odyssey 680 High Energy Drycell. All other fuselage pre-cover details are about completed. Expect covering to begin in several weeks. Getting a lot of good quality shop time during this extremely bad winter along the Mid-Atlantic Coast. All finishing is in Randolph bustrate dope and in previous scheme of the "Great American Flying Circus". Shooting

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A-1 Update (by Tom Weiss)

AIAA Centennial of Naval Aviation Forum "100 Years of Achievement and Progress"
Construction of a 1911 Curtiss A-1 Triad Non-Flying Replica by EAA Chapter 478

This paper discusses the construction of a replica of the 1911 Curtiss A-1 Triad. This aircraft was built as accurately as possible to represent the construction methods and materials used by the Curtiss Aeroplane Company in 1911. This replica is not intended to fly. It will be displayed in the Test and Evaluation Museum located next to the Naval Air Station at Patuxent River, Maryland.

The Lexington Park Chapter of the Experimental Aircraft Association (EAA) was asked to build a non-flying replica of the 1911 Curtiss A-1 Triad to coincide with the 100th anniversary of Naval Aviation. The A-1 was delivered to the Navy on July 2, 1911, the first Navy-procured aircraft. The aircraft design was typical of Curtiss aircraft of the period, consisting of a biplane main wing, horizontal tail with elevators, and nose-mounted movable "bowheader" canard. A mono float was incorporated in place of landing wheels. Curtiss added retractable wheels that he called "beaching gear" to allow the aircraft to be rolled up on the beach when not in operations, but the gear had to be raised to minimize the drag when operating on the water. The A-1 was a 2 seat aircraft with dual controls to allow training of Navy pilots. The engine was a liquid cooled 75-horsepower V-8, designed and built by Curtiss and installed in a pusher configuration with a nearly 8 foot diameter propeller.

The construction of the replica A-1 was undertaken by a group of volunteers who are members of the EAA Chapter #478 in Lexington Park Maryland. Individual members built specific components in their workshops, with larger processes such as fabric covering of the flight surfaces and modular assembly of the aircraft components involving small teams. Coordination of the project changed hands a couple of times over the 10-year build period with the author being the last coordinator. A few critical decisions were made at the beginning of the project:

- (1) The A-1 would be built as accurately as possible with currently available materials using a set of drawings procured from the San Diego Air & Space Museum (produced in 1961 for a flying A-1 replica to celebrate the 50th anniversary of Naval Aviation).
- (2) The A-1 would be for display only, thus allowing the latitude to use construction methods and materials similar to those used by Curtiss in 1911, which would not meet modern FAA standards.

(3) Material substitutions could be made to keep the costs reasonable while retaining the look of the original design. For example, nonaviation grades of wood and steel were substituted for significant savings.

The San Diego Air & Space Museum drawings were produced for a flyable and reasonably safe aircraft that would meet 1961 aircraft standards. All steel components were specified as 4130 steel alloy, all fastener hardware was specified by an Army-Navy (AN) standard designation that is still in place today. All bolts, nuts, washers, and all flying wires, cable fittings, and turnbuckles were replaced with hardware that was available in 1911. Several changes were also made in 1961 to improve aircraft performance, included increasing the size of the wing tip floats from 6 to 8 inches in diameter and changing the nose fitting on the mono-float to a stronger design. As a safety consideration, conventional flight and engine controls replaced the original designs.

The original 1911 A-1 aircraft had conventional flight control surfaces, utilizing a rudder for yaw control, an aft mounted horizontal tail with elevators and a forward mounted bowheader for pitch control, and ailerons mounted between the wings for roll control. Pilot-actuated controls for the aircraft, however, were very different from today. The pilot's control yoke consisted of a wheel attached to a column. Fore and aft motion of the column moved the elevator and bowheader surfaces for pitch control, but the wheel controlled the rudder instead of the ailerons as in conventional aircraft, thus providing yaw control. The single control wheel could be moved left or right of the column centerline to position it in front of the left or right seat occupant. Aileron movement for roll was controlled by a shoulder yoke assembly consisted of a "U" shaped seat back that cradled the pilot's torso (rib cage), shifting laterally when the pilot leaned left or right. Several people surmise this was natural to Curtiss because of his experience racing motorcycles, where turns were initiated by leaning left or right. There were shoulder yokes for each seat (side-by-side seating) and they were connected to each other, so when the aircraft commander leaned left or right, the passenger had to move with him, so as to not hinder control the aircraft. In addition to these controls, the engine throttle was actuated by a foot pedal with one for each occupant.. The A-1 constructed for the Patuxent River Test and Evaluation Museum replicated the same control systems Curtiss provided in the original A-1 delivered to the Navy in July 1911.

The flying surface structures are all wood that was milled to match the drawing dimensions. The aircraft has a total of 10 wing panels, 5 per wing. The center panels of each wing are identical and the 8 outboard wing panels are also identical but are smaller than the center panels.. All wing panels were constructed on a fixture to ensure the correct camber of the single-surface airfoil. Wooden structural joints were all reinforce with brass sheeting, being attached to the wood with brass-plated nails to prevent corrosion. All flying surfaces were

covered with vinyl cloth, as used on modern light aircraft, but tinted to mimic the look of the original linen covering, which is no longer available.

The four booms that hold the tail section are made from bamboo, identical to the original A-1. Bamboo provides a light structure that is strong for the weight. When the bamboo cracked, the common practice was to wrap the cracked section with rope and varnish the rope to make it very stiff and strong. This was also done on the replica A-1.

The retractable beaching gear is a somewhat complicated assembly that allows the gear to be lowered and retracted from either seat by mounting the cable-actuated extension/retraction handle between the seats. The gear design allows it to free-fall to the extended position where it locks. It is retracted by pulling up on the gear handle and is held in that position by the retraction cables.

Finding an engine was one of the most difficult challenges of the replica A-1 building project. Several members investigated building an engine mockup from wood, but available details for the Curtiss model "O" engine were insufficient to permit construction. Fortunately, an engine appearing very similar to the model "O" was found at the National Naval Aviation Museum in Pensacola, Florida. The National Naval Aviation Museum loaned a 1916 "OXX" engine to Patuxent River Museum for installation in the A-1 replica. This engine was previously exhibited to show a portion of its internal parts, having some of its structure cut away to reveal inner workings. An original model "O" propeller was also included in the loan agreement.

The 1961 drawings used for the building of the replica called for AN standard hardware, which included nuts, bolts, washers, and all flying wires, cable fittings, and turnbuckles to assure predictable strength characteristics for a flight-worthy replica. The specification for AN hardware was developed in the 1920's, and shortly after that the hardware began to be produced. However, after conducting some research and talking to historians at the Glenn Curtiss Museum in Hammondsport New York, the collective group decided that hex head nuts and bolts were probably not readily available in 1911, but square-head nuts and bolts were. Therefore, all nuts and bolts in the replica are square-headed and painted black to represent a best guess of what was used in the 1911 original. When square-head hardware could not be provided, the hardware was fabricated to a square head configuration. Likewise, all machine and wood screws have slotted heads, since the now-common Phillips-head screw was not developed until the 1940's.

A major decision was made during the construction phase to replicate the hardware used in the original 1911 aircraft for tensioning the bracing and control cables, even though the 1961 drawings called for aircraft-grade AN turnbuckles. An early version of the now-standard turnbuckle design was developed by Curtiss in 1912 that used a central barrel with

left- and right-hand female threads in opposite ends to join the aircraft structure anchor point (a threaded termination) to the cable end termination (also threaded). The barrel was simply rotated to shorten or lengthen the length of the cable. The original 1911 aircraft, however, used motorcycle spoke assemblies for tensioning. A bracket was made to hold the single-threaded hollow nipple into which the threaded end of the spoke was inserted and the other end of the spoke bent into a half-loop that hooked into the cable termination. Again, Curtiss's experience with motorcycle manufacture and racing dictated this evolutionary adaptation to aircraft. The A-1 has approximately 150 bracing and control cables, each requiring tensioning. The development of the standard aviation turnbuckle greatly simplified cable installation and rigging in later aircraft designs.

Although several details about the A-1 have been lost in the 100 years since it joined the Navy, this replica will help to preserve what is known and allow future generations visiting the Patuxent River Test and Evaluation Museum to see many of the aircraft design features and construction practices used in 1911.

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Gotta Love YouTube !

Looks slightly more complicated than building an RV-9A !!



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A Little Humor !

What is that mountain goat doing way up here in the clouds?

– Gary Larson, in a well-known 'Farside' cartoon.

My definition of an optimist has to be the Luftwaffe F-104 pilot who gave up smoking!

– John Wiley

Now I know what a dog feels like watching TV!

– A DC-9 captain trainee attempting to check out on the 'glass cockpit' A-320.

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Classifieds

House on Chesapeake Ranch Airport for Rent

3 bedroom, 2 bath, with washer/dryer

New vinyl plank floor, new heat pump, new paint, new roof w/architectural shingles

Landlord mows lawn!

Hangar space for small aircraft can be considered with house rental

Ad with pictures here hous-magpb-2194117998@craigslist.org

Contact Chris Moody 703.298.8631

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