

FlightLine

A Monthly Publication of Collins Model Aviators

January 1997



January's Featured Plane — Rockwell International OV-10A "Bronco"

Reminder: January's CMA meeting is on Thursday the 2nd in the main plant cafeteria at 5:00 p.m.. The January Build session will be Thursday the 9th from 6 to 9 p.m. in the main plant cafeteria.

January's Featured Model: I found this OV-10A photo on the USAF Museum Modern web page at: http://www.am.wpafb.af.mil/museum/modern_flight/mf48.html Rich Dean and Duane Smith have been working together on a model of this plane.

JAD →

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Rockwell International OV-10A “Bronco”

Reprinted from the USAF Museum web page

The OV-10A is a twin-turboprop short takeoff and landing aircraft conceived by the Marine Corps and developed under an Air Force, Navy, and Marine Corps tri-service program. The first production OV-10A was ordered in 1966 and its initial flight took place in August 1967.

The Bronco's mission capabilities include observation, forward air control, helicopter escort, armed reconnaissance, gunfire spotting, utility and limited ground attack; however, the USAF acquired the Bronco primarily as a forward air control (FAC) aircraft. Adding to its versatility is a rear fuselage compartment with a capacity of 3,200 pounds of cargo, five combat-equipped troops, or two litter patients and a medical attendant.

The first USAF OV-10As destined for combat arrived in Vietnam on July 31, 1968. A total of 157 OV-10As were delivered to the USAF before production ended in April 1969.

The aircraft on display was flown to the USAF Museum on October 2, 1991, and is painted as it was when it served in Southeast Asia.

DESCRIPTION

Manufacturer: Rockwell International
Designation: OV-10
Version: A
Nickname: Bronco
Type: Observation & Communication

SPECIFICATIONS

Span: 40 ft.
Length: 41 ft. 7 in.
Height: 15 ft. 1 in.
Empty Weight: 6969.00 lbs

Weight: 14,444 lbs. max.
Wing area: 291.00 Sq Ft
Armament: Four M60C 7.62mm machine guns in fuselage sponsons, plus 3,600 lbs. of mixed ordnance or gun pods carried externally.
Engines: Two Garrett-AiResearch T76s (-G-10, left; -G-12 right) of 715 shaft hp. each
Cost: \$480,000

PERFORMANCE

Maximum speed: 281 mph.
Cruising speed: 223 mph.
Range: 1,240 miles
Service Ceiling: 26,000 ft.
Climb: 2600.00 Ft/min

Additional data found in:



<http://aeroweb.brooklyn.cuny.edu/museums/types/o/ov10.html>

JMD →

From the President

by John Michael

As I write this it is still the middle of December, Christmas preparation is in full swing, and winter is still coming. But by the time you read this Christmas will be over, the longest day of the year is past, so the days are getting longer, and spring is coming. Get those plane ready.

The election for 1997 is over. We didn't have that many people return their ballots, but results are results. My thanks to all the people who agreed to run, and especially to Dave Gillespie for taking on the secretary/treasurer job, and to Jim Doty for again agreeing to be the newsletter editor.

So I get to be president for another year. That's not so bad. By being president I have had the chance to get to know the club members better, and be involved in a few things I probably would not have been otherwise. If anyone has any ideas about things they would like to see the club doing or some possible new direction, let me know, or bring it up at the meeting. All new ideas are welcome and worth talking about.

This newsletter is only being distributed to those people that joined the club for 1997. As you can see from the distribution list, the number is much smaller than last

year. We are still looking for people to rejoin. If you notice that someone you know is not on the list, let them know it is not too late.

Don't forget the January meeting (Jan 2), and the next build session (Jan 9). See you there.

John Michael, CMA President →



Rich Dean and Duane Smith's OV-10 Bronco at the first build session. It's not exactly identical to the cover photo, but it will probably fly better than a perfect scale version would. The plane built using a modified wing and fuselage from a trainer. I can't wait to see it in the air. *JAD*

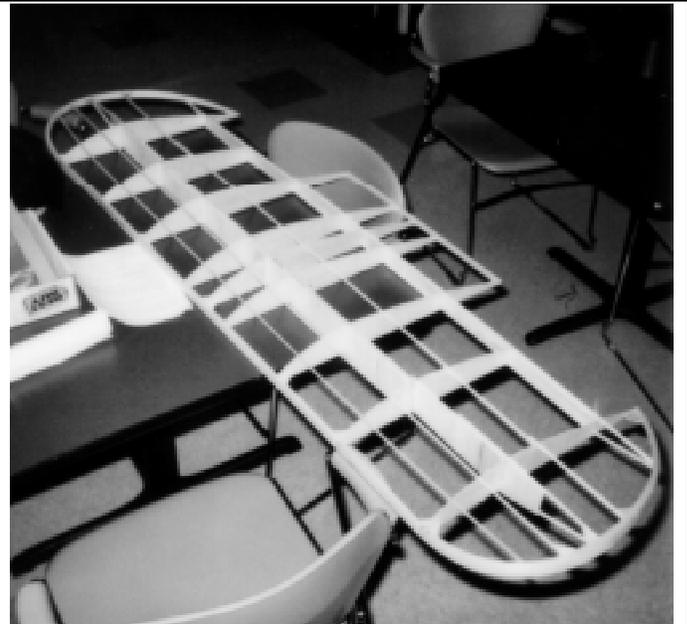
December's build sessions

by Rich Dean

Two build sessions are history. Some interesting projects are underway. Basil Tilley is constructing a HUGE Lazy Bee from Clancy Aviation and Brian Smith is building a small rubber band powered P-51. John Michael and I are each building a smaller Lazy Bee for .15 sized engines. Duane Smith is finishing work on a Sea Cat sea-plane. I have been trying to get John Crilley to bring his Top Flite P-51 to a meeting so we can see how it is going, but he is reluctant so far. If it is anything like his past efforts it will look great! I haven't heard what everyone is building so bring the bare bones to meetings and keep us up to date.

Several new members have been showing up picking up hints and ideas and asking the normal questions beginners ask. As for starters, recommended first plane is the Sig Kadet LT-40, engine is SuperTiger .45, radio is a 6 channel Airtronics, Futaba, or JR. The engine and radio are not the bottom of the line and allow for growth into the second and third planes a beginner will work into as

his skills increase. We don't recommend bottom of the line equipment because it is quickly outgrown and you would spend more money buying better equipment the second time around than spending a little more up front.



The wing from Basil's large Lazy Bee. He modified it to have ailerons and added extra support to strengthen the wing. Note the extra two ribs in the center. *JAD*



John Michael working on his standard size Lazy Bee. I hope next summer we can get both sizes of Bee in the air at the same time. *JAD*



Duane Smith working on the stabilizer of his Sea Cat

Thanks to last years officers for a job well done and a welcome to the new officers. There is a certain amount of organization needed for any club to continue being a functioning club, thanks guys for making it happen. As always if anyone would like something new or different to happen next year let your club officers know.



Brian Smith working on a P51 model and Michael Wesner working on an RC car

A thank you letter to Sig has been sent out with a picture of the 1996 fun fly Sig kit winners. Talking about the annual fun fly, it has been noted that the wind dies down about the time our fun fly ends when we start at noon. Should we start the fun fly with an afternoon barbecue then start flying as the late afternoon winds start slowing down?

I guess we are ready for 1997 now! Keep building.

Rich Dean, Build Session Coordinator ➔

Election Results

by Jim Doty

At December's CMA meeting it was voted that the election of club officers should be closed and the final results tallied. David Gillespie offered to serve as secretary since no one was on the ballot and the write-in candidates declined. He was unanimously confirmed at the meeting.

The ballots were counted and the following were elected as the 1997 CMA club officers.

President: John Michael

Vice President: Bryan Wesner

Secretary/Treasurer: David Gillespie

FlightLine Editor: Jim Doty

Tom DeWulf said he willing to continue to serve as Web Page Editor.

Thanks to those who were willing to serve as club officers. It's good to have people who are willing to donate their time to make our club successful. Also thanks to those who may not have elected positions, but work just has hard to support the build sessions, flight training, club picnic, and other activities.

I hope that during this year we can get more people actively involved in the club (for example by writing articles for the FlightLine☺) so we can help spread the load and bring even more energy into the club.

James H. Doty, FlightLine Editor ➔

National Newsletter



The following articles were taken from the
September 1995 issue of the National Newsletter.

James H. Doty, FlightLine Editor →

Microfilm Techniques

by Stan Chilton

Over many years other modelers have asked me how I get the solid color silver and straw brown sheets of microfilm. I used to think anyone could produce this kind of film but I've learned if you don't have the right equipment, tank and frames, pouring and lifting satisfactory microfilm sheets can be quite frustrating. Following is my procedure.

Water Tank

The first requirement is a proper size water tank or pan. I built one out of a 4'x 8' .040 thick aluminum sheet, or rather I took the sheet to a sheet metal fabricator and had him make a tank 4 inches deep by 3' 4" wide and 7' long.

The top edges are folded over and the corners are overlapped and riveted, making a quite water tight assembly. This size tank is larger than needed or usable but I tailor the width by means of a 2" by 2" "L" angle aluminum just shy of 7' long so it will fit snugly inside the tank so the width can be adjusted to restrict the spread of the microfilm.

A tank larger than 2 ½' x 7' will allow the poured film solution to spread too far and you will not be able to pour a large enough quantity of solution to get a sheet thick enough to pick up. I think a tank size of 30" x 72" x 2" deep is just about optimum and should be able to handle sheets up to 12" by 48". The Cadillac of all tanks would be made of .032 to .040" thick stainless steel with welded corners and a drain plug in one corner. Some modelers use a 1" x 4" wood framework with a plastic sheet liner. This should work just as well as my aluminum tank and take less storage space.

Microfilm Frames

I used to use balsa wood frames of about every dimension, whatever I had on hand. But if you're serious about microfilm model flying, take the time to build some frames that will assist you in picking up the film colors you want.

Buy some clear 1" thick white pine, any width, and cut it into strips about .66" wide. Since the 1" white pine is really only .625 thick, your strips are .625" x .66". I use three sizes of frames: (all outside dimensions) 10 x 30, 12 x 36, and 12 x 48. The 12" outside width produces a sheet of film wide enough to cover a 9.75" chord wing.

Assemble the frames using Titebond glue and small gussets in the corners. Apply one coat of sanding sealer, sand smooth then spray paint with whatever color of spray paint you have on hand.

There is a reason for building these sturdy, heavy frames. If you've ever picked up a sheet of film intact, then had it go splat and disappear, it had probably shrunk too tight on the frame. The white pine frames press down on the film sheet on the water and stretch it slightly so you won't lose it after getting it picked up. An additional benefit is the extra rigidity. Thin sheets are hard to pick up and retain with flexible frames.

I make up enough frames so that I can make up a three to four year supply of microfilm sheets. But if you already have balsa frames on hand they are usable. To get the balsa frames heavy enough to press down on the poured film, I lay a 15" metal drafting machine scale (ruler) across the center of the frame. Leave this extra weight on

the frame for about five minutes to stretch the film before attempting to lift the sheet off the water.

Microfilm

I have used Erv Rodemsky's various formulas of microfilm and the only one I didn't like was his GP83M and S. I think his current batch is GP-90 which is the easiest of all to pick up. I really liked his GP-84-2P and still use it. I have also used Micro-X Red Label and Lew Gitlow's IMS film. Both these films produce satisfactory sheets, dry and stable. Use whatever product you have the most confidence in. I prefer Erv's batches because they work well for me and I know more about what's in them.

This is very important. Any microfilm you purchase that is bottled in plastic bottles should be transferred to glass bottles immediately. Use glass bottles with an aluminum gasket on the lid. Avoid the lids with paper or waxed liners for gaskets. The solvents in the microfilm will escape through the plastic bottles. Very rarely will you need to thin the mixture with acetone but go very slow, thinning only as much as absolutely necessary.

Applicators

I apply the microfilm solution to the water differently than anyone I know. But it's the main reason I can pour solid color sheets in the color and thickness I desire. It also wastes very little microfilm mixture. I use a glass Scc hypodermic syringe with a large 2 1/2" long #12 needle. I'd use a larger needle if I could find one.

There are other methods of dispensing the microfilm fluid onto the water. Erv Rodemsky uses a short piece of 3/16 or 1/8 brass tubing, filling it with the precise amount of film desired, letting gravity flow the film out onto the water. An added benefit is if the liquid film mixture won't flow evenly out of the tube then it is too thick. Bernard Hunt uses the same system but with an 8" long graduated approximately 1/4" diameter glass tubing and he varies the orifice by heating and forming the size of the orifice to produce the desired outflow (about .050" diameter). He recently picked up solid silver sheets and six out of seven attempts at gold straw brown colors.

The Water

I used to purchase three to five gallon containers of distilled water, and still do occasionally, depending on my results with tap water. I bought a charcoal and sediment filter and use these to filter the tap water into the microfilm tank. Erv Rodemsky uses distilled water and saves it for reuse. The distilled water definitely will not leave mineral deposit specks on the film. If the

filtered tap water leaves any residue on the first few sheets of film, I immediately switch back to distilled water. Our tap water in Wichita comes from three different sources, a nearby lake, drilled wells and underground aqueous beds about 90 miles away. Depending on the particular source, sometimes the filtered tap water works well and sometimes it doesn't but it's always cheaper than distilled water. The water must be clean and potable, that is you'd drink it. Be sure the tank is hospital clean. The microfilm solution will not spread well on contaminated water.

Timing the Pour

About 25 years ago I was pouring microfilm and having no luck whatsoever picking up almost any kind of sheet. I decided to call it quits for the evening and came upstairs from my model shop. It was raining outside and I just happened to check the barometer. It was 29.40. About three or four days later it was cold and clear, barometer 30.30 and I refilled the water tank. The next morning I lifted 15 sheets out of 15 poured, all in silver and gold, some 12 x 48 sheets. Since then I wait to produce microfilm until the barometer is at least 30.20 or higher. This condition is normally associated with dryer air, which also may be helping. There seems to be more high pressure conditions in winter than in summer. A couple of days before I pour, I disconnect the humidifier from our house furnace, helping keep the air dryer.

Producing the Film

Prior to producing the film, you should have on hand sufficient frames, the tank, aluminum divider bar, water, hypodermic syringe and of course, the microfilm solution.

Fill the tank 1 1/2" deep with water. Let stand 6 to 8 hours, or overnight to stabilize in temperature evenness. Make sure the atmospheric pressure stays high.

For the amount of film you can dispense on water through the #12 needle of the syringe, position the divider "L" angle aluminum so your effective water width is 30", times the length of your tank. Different film dispensing methods may require more or less water width, depending on the total amount of film solution laid on the water. Absolutely, the amount of film on the surface of the water determines the thickness of the film, provided the water surface area isn't too large, and the liquid film has been dispensed evenly on the water.

Fill the syringe with about 2.7 cc's of film. Turn upside down and set for a few minutes for the microscopic bubbles in the film to rise. For a holder, I epoxied a 2-

ounce glass jar's base to a 5" x 5" x 3/8" base of balsa. I cut a piece of foam rubber and inserted it into the jar so the plunger end of the syringe rests on the foam and the syringe flange rests on the top of the bottle. (Syringe is still upside down.) The plunger must be supported or it will fall down. Grab a soft hand tissue and cover the needle end of the syringe and top off the film to 2.5 cc's of solution.

Standing beside the long dimension of the tank, start dispensing the film solution at the left end of the tank and run a stream down the center, hopefully running out of film at the same time you reach the other end of the tank. During the pour, the syringe will be held at about a 30° angle to the water and the tip of the needle, filed square, held as close to the water as you can without dipping it into the water. Just enough pressure is exerted on the plunger to let the microfilm solution escape the syringe evenly and smoothly. If the film on the water has circular stripes, the ejected solution has been forced under water. Try again with less plunger pressure.

Dispensing the film solution is a matter of feel and patience. You must use all the film each try and you must lay the film entirely end of tank to opposite end of tank, at the same time keeping an even dispersment of the film. Keep the same speed traversing the tank every time. I generally get in the groove of evenly dispensing the film within four or five trial runs. Even if the laid down solution isn't the exact color and thickness you want, part of it may be so use one of the smaller frames.

When you are comfortable dispensing the film evenly and accurately, you can adjust the amount of film in the syringe to get the thickness you want. 2.5 to 2.6 cc's gives me silver, 2.8 or 2.9 cc's gives me very dark blue. 2.7 cc's is straw brown.

After I've completed a satisfactory pour, I fill the syringe for the next pour, setting it in the jar holder upside down, getting ready for the next pour. Leaving the previously poured film on the water, I take whatever size frame I want outdoors and spray it lightly with 3M 77 contact spray or 3M 75 with a fine spray mist nozzle. If half the film on the water is silver and the other half is blue or off color, I'll use the 10 x 30" frame and place it on the desired silver end of the water. If the poured film is of even color, I'll use the 12 x 36" frame.

Place the sprayed frame gently on the film. Next tear off the excess film outside the frame and remove this debris from the water. Wait about five minutes then lift the film and frame off the water. Hold very still just above the water with one corner down to allow the water to drain

off. This will take about 30 seconds, and when mostly dry, carefully set the frame vertically at the other side of the room. The film and frames must be absolutely dry before putting in the storage boxes.

Lifting the film off the water is a technique all in itself. I have heard of some who lift off one end and slide the film and frame lengthwise out of the water. I don't think you can lift silver sheets this way. Lew Gitlow says you need help from the "Lift Angel" to get off good light sheets.

I grasp the frame by the ends and pull the frame slowly to me before I start the actual lift. Then raising the long edge farthest away from me, and a little side to side movement, I move the raised edge further from me and rotate this edge to vertical by the time the trailing edge is leaving the water. Gentle is the name of this game. The most critical times of the lift is the first movement off the water and the free film/frame that is just off the water. The lift movement must be all in one smooth motion - if you stop or hesitate during the lift all is generally lost. Ron Higgs lifts the edge nearest him and sometimes gently blows under the film helping lift it off the water. Here again, there are slightly different techniques achieving the same result.

After you've set the finished film/frame to one side, the syringe will be ready to pour the next sheet. But before you do this, examine the water surface and clean it of any residue left from producing the previous sheet.

I use either silver or straw brown for F1D wings, solid silver for stabs and blue for props. Don't worry about the strength of the silver and straw brown film if you're using Rodemsky's film. It is plenty strong enough. There's probably not much weight saving between gold and blue film, but I know that a gold patch on gold film is blue so gold must be about half as thick as blue. Producing really light solid color film is not easy but is certainly worth it when you hear the nice comments from your competitors about the good looking film, and it probably is lighter.

Storing the Finished Film

If you have made microfilm previously, you probably already have a favorite way to store the finished frames of microfilm. If you do not have a favorite storage system, here's mine:

From a wholesale florist, I purchased about eight or nine large cardboard cartons with shallow top lids. The boxes measure 44 1/2" long, 12" deep and 22" wide. The lid or top fits over the box with 3" overlapping sides. The

florist charged me \$4 to \$7 each. I had to build my own 50" long box to store the 48" long sheets.

For storage, the sheets are laid into the box flat with 3/8" x 3/8" x 14" balsa spacers, two per sheet. Stacked thus, each box will hold about a dozen frames. Each box is vented to allow free air circulation around the film, but not much. Just under the top lid on each side cut a vent strip about 3/4" X 8" and cut the same size strips near the bottom on each end, for a total of four vents per storage box. The cardboard boxes can then be stacked ceiling high in one corner of your model workshop, but preferably in another room free of sawdust, etc.

From Indoor News and Views
Washington, Missouri

Reprinted from AMA National Newsletter September 1995 →

Tape Tip

by Gary Warner

To hold the leading edge material in place on sheeted foam core wings while the glue dries, try using Scotch Brand #230 Drafting Tape made by the 3M Company. This tape is similar to masking tape however the adhesive is less sticky. It is much easier to remove after the glue dries and will not tear up the foam in doing so. While the adhesive becomes more aggressive with time, I've had no difficulty removing it after 24 hours in place.

This drafting tape can be found at any office or drafting supply store, and the only real drawback is that it cannot be reused. Several strips placed 3-4 inches apart along the length of the leading edge will hold neatly and securely.

from UPdate, Gary Warner, Editor
333 Prestonwood Dr., Richardson, TX

Reprinted from AMA National Newsletter September 1995 →

Leonardo's Helicopter

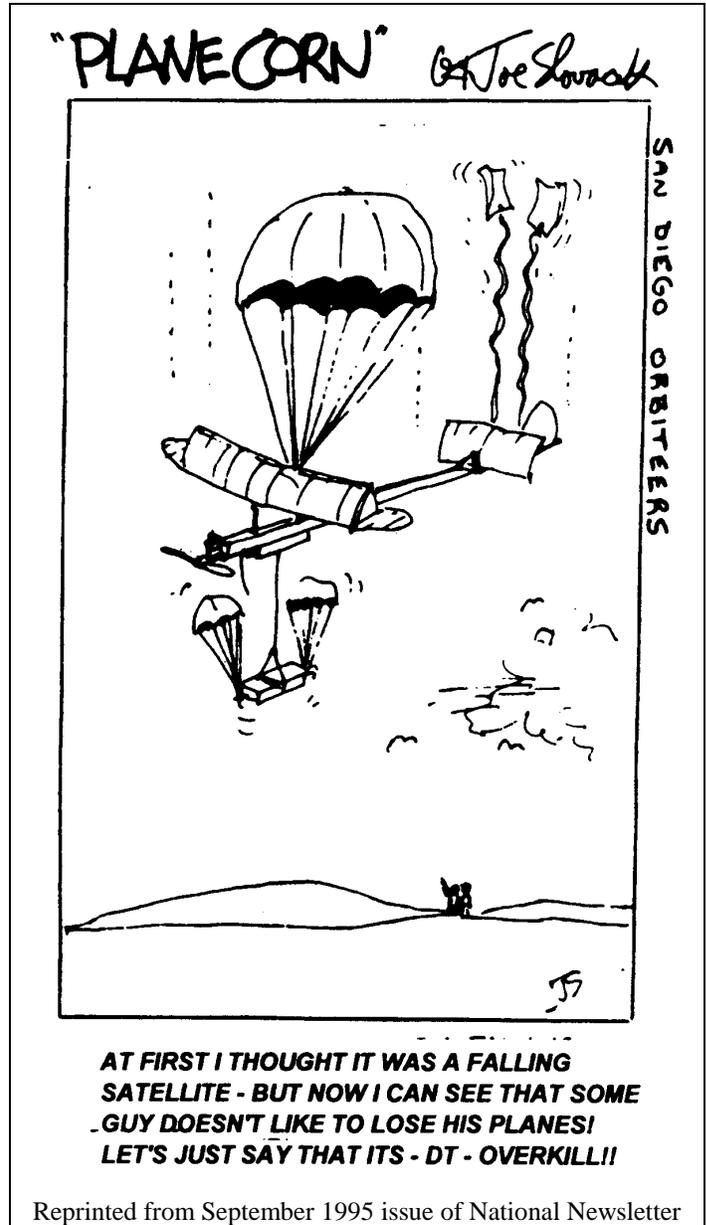
by Paul Robert Walker

Leonardo da Vinci watched an eagle fly through the air. He carefully observed the shape of the eagle's wings and the movement of its muscles. He took detailed notes about the air currents.

Suddenly he realized that the eagle's wings pressed down against the air and the air pressed back up against the wings. This air pressure was the secret to flight! And if an eagle could fly, he thought, so could a person.

Based on his studies of air currents and bird flight, Leonardo designed a strange-looking machine.

Leonardo's drawings show a device with a rotating spiral "wing." As the wing turned, he reasoned, the air pressure below the wing would become greater than the air pressure above it. The difference in pressure would lift the machine into the air, just as the pressure against the eagle's wings lifted the bird.



Leonardo called his flying machine an "aerial screw." As good as the idea was, there were two major problems with it. First, the combustion engine hadn't been invented yet, and there was nothing in existence that was powerful enough to turn the large screw like wing. Also, Leonardo would have had to rely on wood, rope and cloth to build

his machine. These materials were far too heavy to make a device that could fly.

It was not until 1885 that a successful gasoline-powered engine was developed, and in the 1930's helicopter flight finally became practical and safe. But it was an artist on a sunny hill in Italy four hundred years before who first dreamed that it could happen.

From the Columbia Flyer,
Brian Graves, Editor
7115 Garv Dr., Belleville, IL 62223

Reprinted from AMA National Newsletter September 1995 →

Heads Up, CMA Activities

Thursday, January 2, 5:00 pm—Club Meeting

Thursday, January 9, 5:00 pm—Build Session #3

Friday, January 24, 5 pm—FlightLine Deadline

Thursday, February 6, 5:00 pm—Club Meeting

Thursday, February 13, 6-9 pm—Build Session #4

Friday, February 21, 5 pm—FlightLine Deadline

Note: Meetings and build sessions will be held in the 35th street N.E. Facility (main plant) Cafeteria building 140.

1997 CMA Staff

President:	John Michael
Vice President:	Bryan Wesner
Secretary/Treasurer:	David Gillespie
FlightLine Editor:	Jim Doty
Web Page Editor:	Tom DeWulf

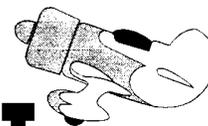
Flight Instructors:
Rich Dean
Dave Decker
Dave Dillman
Mark Woytassek

Flight Instructors in training:
Irv Anderson
Tom DeWulf

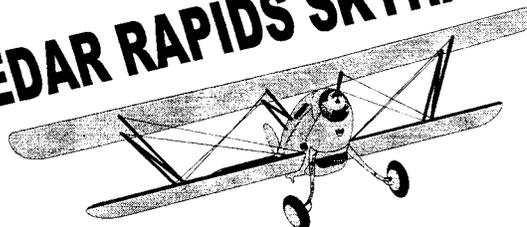
Test Pilots for first flights of new airplanes:
Rich Dean
Mark Woytassek

Local Activities

SEVENTH ANNUAL EASTERN IOWA R/C SWAP MEET



CEDAR RAPIDS SKYHAWKS



Palo Community Center
1006 1st Street
Palo, Iowa
Sunday, February 23, 1997
10:00 AM to 3:00 PM

For table reservations contact
R/C Adventures, 135 Marion Blvd.,
Indian Creek Mall, Marion, Iowa 52302
(319)-377-5932

Send your input for FlightLine to:

James H. Doty
MS 124-300
x5-2931

jhdoty@collins.rockwell.com

Send your input for the CMA Web Page to:

Tom DeWulf
tvdewulf@cacd.rockwell.com

1997 CMA Membership

<u>M/S</u>	<u>NAME</u>	<u>M/S</u>	<u>NAME</u>
108-103.....	Irvin Anderson		108-166.....	John Michael
108-166.....	Geoffrey Barrance		108-166.....	John Michael (for Kevin)
124-111.....	Alan Bechtold		105-167.....	Noah Misner
124-111.....	Bob Bushette		108-136.....	Patrick Neu
137-148.....	Brian Collins		108-136.....	David Neu
124-111.....	Dan Cooley		137-136.....	Marion Payne
124-115.....	Rich Dean		124-123.....	Wayne Savold
153-264.....	Tom DeWulf		108-136.....	Duane Smith
124-300.....	James Doty		108-136.....	Brian Smith
106-183.....	Mike Eastman		105-152.....	Basil Tilley
153-264.....	Doug Emerson		139-142.....	Charles Ward
153-163.....	David Gillespie		153-264.....	Bryan Wesner
153-163.....	David Gillespie (for James)		153-264.....	Bryan Wesner (for Michael)
153-163.....	David Gillespie (for Amy)		107-110.....	Victor Wolfe
108-166.....	David Mason		124-115.....	Mark Woytassek

Mike Crilley
2090 F Ave. NW
Cedar Rapids, IA 52405

John Crilley
2540 Second Ave
Marion, IA 52302

Academy of Model Aeronautics
5151 E. Memorial Drive
Muncie, IN 47302

R/C Adventures
PO Box 284
Marion, IA 52302

Is someone you know missing from this list?
Give them a call and ask them to *Come Fly with us in CMA!*