

Servo Chatter

AMA Club Charter #110

April 2017



Oscar Rico photograph

www.sccmas.org

Official Newsletter of the SCCMAS "Tomcats"
Field Location: 10250 Monterey Road, Morgan Hill, CA 95037

President's Corner



This is my first newsletter article as the President of the SCCMAS. The transition is in the final stages. I would like to thank Don Coulter for serving as the President of the SCCMAS for the past two years. Don is a founding member of the SCCMAS and the designer of the field layout that we all enjoy. Over the last couple of years Don has had some joyful changes in his life, moved out of the area with his wife Kelly,

and decided that he could not devote his time to the SCCMAS. Don does travel to the South Bay on occasion; expect to see him buzzing the sky at the SCCMAS in the future.

As most are aware this past winter storms not only ended the drought in the area, but also caused severe damage to the SCCMAS access road at the end of Barnhart Road, preventing vehicle access to the facility. Recently discussions have started with the County Parks Department. Several temporary and long term field access road options were purposed. The County Parks Department has identified a potential solution that would provide access to the field. I will keep the membership informed as more information becomes available.

Looking forward as the weather improves, the field is drying out, the green grass has replaced the desolate landscape from years of drought. Several volunteers have been making the 2 ½ mile walk or bike ride out to the field to spend time on mower and maintain the facility. This has been challenging at times, having to haul in mower fuel, field supplies, additional soda and water on wagons. Keeping the field maintained during this time when we cannot access the facility with vehicles is very important. We are always looking for volunteers to help with the maintenance of the field on a Saturday and Sunday. I will notify the membership for future trips to field, maintenance or flying. The group meets at the Anderson Dam Visitor Center in Morgan Hill around 9:00am.

A reminder for those who use the field, please remember to bring out what you bring in. This includes trash and model debris. I have noticed a fair amount of trash left in the bins. Please bring a trash bag. The dumpster and bathrooms will remain locked as there are no services at this time! Also, it is always a good idea to use the buddy system when flying. Please avoid flying by yourself.

Over the last decade plus some I had the honor of serving as the SCCMAS events coordinator. This position of course brought challenges and rewards, especially around the annual airshow. As I assume my new role in the SCCMAS, **Eric Sander** will be transitioning in to the events coordinator position. Eric will be looking for volunteers to help with future events. The other vacancy is Field Maintenance. **Jon Mattson** will take on this position and lead the coordination of all field maintenance related items, recruit volunteers to help with the tasks required to keep the facility functioning. Welcome Eric and Jon!

This year we have decided to cancel the annual airshow and other events at the field through July due to the field access uncertainty.

The next SCCMAS club meeting will be on Saturday, May 6th at the Wings of History Museum, 12777 Murphy Ave, San Martin. This meeting will start at 5:00 p.m. The air museum will be open prior to the meeting.

From the Editor



I seem to have fallen into one of those phases where you lose airplanes for silly reasons. I lost a couple of planes in the past 3 weeks including an electric space walker due to a failed RX battery. The plane had not been flown for many months. Because of the road situation and the long walk to the field, I decided that for the moment, electrics are more practical than other type of planes. So I pulled the space walker out, checked it, cleaned it and took it to the field. Here is where pilot error got me. I charged the main flight batteries and then proceeded to charge the RX battery which was hidden in the area where you would put a fuel tank. It took a while to charge which should have been my clue. However, I did not physically check it, simply checked the charge level on the meter and decided it was ok (2 Cell LiFe showing 85% charge at the point) and decided to go and fly.

Nice clean take off and as I was turning into cross wind, I no longer had control on the plane. My first reaction was radio problems. The plane did the dance of death and spiraled into the tall grass a few seconds later. Once we found it, thank you Andrew for the Mavic search assist, and picked up a pile of parts, I reached into the broken fuselage and retrieved the RX battery which looked a lot like a sausage. When I checked the battery, it showed absolutely no power. Lesson learned, if you have not looked at the battery on a plane that has been sitting around for months, do so.

This issue is the first with Steve reporting as the new president. He came onboard and unfortunately is facing a serious challenge with the access road closure and I know he is working furiously in the background to get us access. Be patient and help him get there. As you saw from the last issue, and there are pictures in this one too, a group of us are experimenting flying at other flying fields as well as doing the trek to the field as often as we get a chance to. The walk can get taxing and a bike with a wagon in tow is a much better solution if you can manage it.

If you see this in time, this weekend is Flite Fest – West (April 27th, to April 30th 2017. 900 Fairgrounds Dr, Vallejo, CA 94589) which promises to be a great deal of fun. Check it out on <http://www.flitefest.com/west/>. Finally please note you can now advertise RC stuff you want to sell or look for specific items by sending me the relevant information which will be in the newsletter.

Happy Landings,

Bahman

All off-site events are still active. The next off-site event will be the annual Wings of History Airport Day on Saturday May 20th. This is a public event! The SCCMAS will be hosting a tent with a static model display, R/C hobby information and club information. We will perform a model flying demonstration on the taxiway at noon. If you would like to volunteer to help at this event, contact Eric Sander at contests@sccmas.org.

See you at the field,

Steve Smith

Governing Board Members and other Volunteers of the S.C.C.M.A.S.

President*	Steve Smith	408-292-1212	steve@sccmas.org
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AMA Intro Pilot**	Peter Vogel		
Field Weather (automated)		408-776-0101	
SCCMAS Business Office		408-292-1212	
SCCMAS WWW address		www.sccmas.org	
Club Meeting Dates - 05/06/17 08/05/17 11/11/17			

* Governing board members

** AMA Intro Pilots. These pilots can fly non AMA members once, certain restrictions apply

*** Email is preferred to voice mail



April 8		Spring Swap Meet
May 19 - 21		Heli Jamboree 
May 20		South Coast Airport Open House 
June 10	 	SCCMAS Work Party 
June 24		Jet Fly-In  
July 15-16		Annual Airshow 
August 19		Pattern Day
September 9		Summer Swap Meet 
October 7		T-34 / Unlimited Warbird Race Finals
October 13		Coyote Classic Bike Ride
December 3		Toys-For-Tots 

Treasurer's Report



Jim Patrick

SCCMAS Profit & Loss October 2016 through March 2017

Ordinary Income/Expense

Income

Contest entries	280.00
Food sales	162.00
Membership dues	25,728.00
Vending machine	518.00
Total Income	26,688.00

Expense

Bay Alarm	270.00
Computer supplies	108.99
Dues and Subscriptions	220.00
Equipment Rental	163.14
Food	610.68
Garbage service	1,063.00
Licenses and Permits	342.50
Miscellaneous	43.00
Postage and Delivery	740.70
Rents paid	230.00
Sanitation service	2,637.38
Supplies	1,147.76
Telephone	
Internet	449.90
Telephone - Other	590.95
Total Telephone	1,040.85
Utilities	
Gas and Electric	447.05
Total Utilities	447.05

Total Expense 9,065.05

Net Income 17,622.95





Greetings RC Gang

Well I sure do miss seeing you guys at the field. I've walked in a couple times alone (On two consecutive Monday's) to fly my 1/4 scale cub, and I realized after talking with Steve this is breaking a standard rule of safety, bring a buddy along, even if they are not flying. You need another friend just in case something happens. Also, please continue to follow club rules and guidelines during these hike-in flight times. One of the biggies is

arming electrics while in the pits. This must not be done and has led to another unfortunate incident. Also, let's keep those Red No Fly Zones just that no flying. That means tiny anything, helis, microplanes, quad copters, discus launch gliders.

During this unfortunate outage, please if you're tempted to go fly alone, STOP, think, call me or Steve, Bahman or Mike Legget. We can find you a fellow RC buddy so your trip inn and out plus flying is safely done with a buddy.

Please let me know if you have any questions or concerns. I look forward to seeing you at our meeting on May 6th at Wings of History Museum.

I'll be asking the board who should get one of the coveted SC-CMAS safety first awards. I'm sure you don't want to miss that.

Regards-

Tim

SCCMAS (Tomcats) field is located in the county park and can be reached via Monterey highway

Here are a few youtube links that update the B-26 status. I've been running it around on the street getting the bugs out.

<https://www.youtube.com/watch?v=Wi9aFxiR1Sg>
<https://www.youtube.com/watch?v=Shxmifkwbmg>
<https://www.youtube.com/watch?v=YsxlUHVOiSY>

The build can also be followed by registering as a guest on rcscalebuilder.com and following:

https://www.rcscalebuilder.com/forum/forum_posts.asp?TID=25345&PN=1&TPN=1 (start of the build)
 to
https://www.rcscalebuilder.com/forum/forum_posts.asp?TID=25345&PN=1&TPN=21 (latest post)

Keep 'em Flying,
Mike

Please help support these companies and organizations as they help to support us

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Perry Lee

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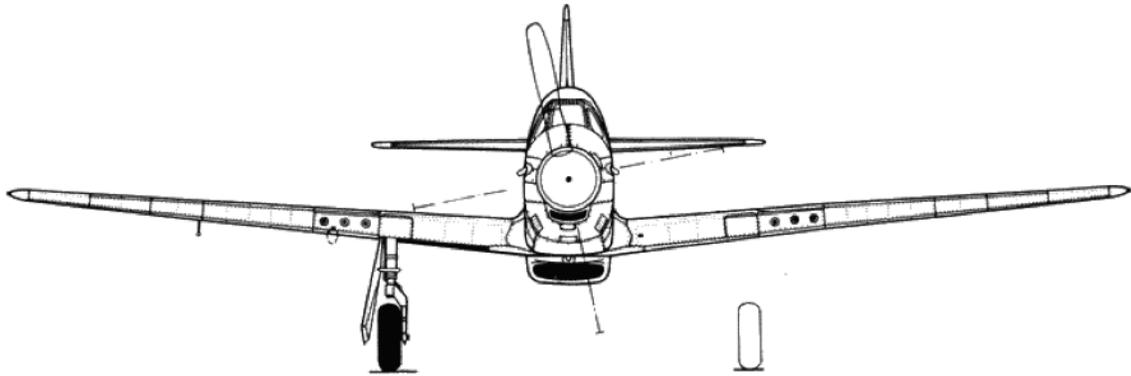
www.callie-graphics.com

Aircraft Design – Wing and Tail

By Lou Rodriguez (Lou@SCCMAS.org)

The previous article (Starting from Scratch) discussed wing design, including airfoil selection. Additional elements of the wing design are dihedral and washout. Dihedral is the angle of the wing as viewed from the leading or trailing edge. The dihedral angle has an effect on stability and roll coupling. Some dihedral helps with keeping the wingtips level during straight flight. Roll coupling associated with dihedral will cause the airplane to bank into the turn with rudder application. This is usually desirable except for aerobatic designs.

Low wing airplanes would typically have 3° to as much as 8° dihedral. The P-51 Mustang wing has 5° of dihedral, The T-28 Trojan uses 8°. A mid-wing aerobatic airplane is likely set up with 0° dihedral. A high wing airplane may have no dihedral, but 3° to 4° will eliminate the visual appearance of wing droop. Finally, an RC airplane using rudder only to turn (such as a 3 channel setup without ailerons) would have 10° to 12° dihedral. This is needed for the desired roll coupling to maneuver in turns.



North American P-51 - 5° Dihedral

The stall characteristics of an airplane are influenced by airfoil selection and wing loading. A wing will stall at its critical angle of attack, regardless of the aircraft attitude or speed. A thin airfoil with a high wing loading is less forgiving than a thicker wing or lighter wing loading. A mild stall response starts with some mild buffeting and then the nose drops. We have witnessed airplanes that give no warning to an impending stall but instead quickly drop a wing tip and proceed into a snap roll or spin. A scale model may have a heavy wing loading by the nature of the design or because of scale detailing. Washout can mitigate some of the undesirable stall characteristics. The wing is built so the wingtips are 1° to 3° negative incidence compared to the root. This, in theory, allows the stall to occur at the inboard section of the wing while the tips are still flying.

The angle of incidence is the relationship between the chord line of the wing and the longitudinal axis of the fuselage. Our models are usually lightly loaded and fly nicely with the wing at 0° to 1/2° positive incidence. A heavier scale warbird would typically have the root set at 1° to 2° positive incidence, especially if the wing is built with washout. A special situation applies to flying boats where the wing should be set at 3° to the longitudinal axis. The flying boat cannot rotate as an airplane with landing gear and wheels. The wing must develop lift with the fuselage at or near level in order to get off the water. The wing angle of attack at liftoff for most airplanes is around 4°.

The horizontal stabilizer must also be attached at a proper incidence angle. It would typically be set at 0°. An exception applies again to flying boats where the horizontal stab would be set at positive 2-1/2° to 3°. This assumes the wing incidence is positive 3°. Scale models may have positive incidence in both the wing and the horizontal stabilizer. Most models will fly nicely with the difference between the wing and stab set at 0° to 1°.



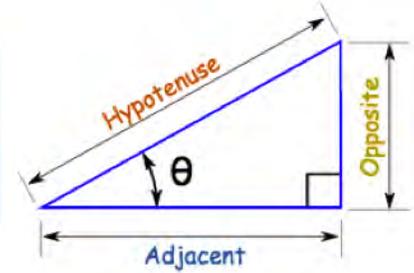
There are laser devices, digital levels and even your smart phone that can be used for measuring angles from 0° horizontal to 90° vertical. Another method is derived from the trigonometric sine (sin) function of the angle.

θ		Sin	Cos	Tan
Deg	Rad			
0	0.000	0	1	0
1	0.017	0.0175	0.9998	0.0175
2	0.035	0.0349	0.9994	0.0349
3	0.052	0.0523	0.9986	0.0524
4	0.070	0.0698	0.9976	0.0699
5	0.087	0.0872	0.9962	0.0875
6	0.105	0.1045	0.9945	0.1051
7	0.122	0.1219	0.9925	0.1228
8	0.140	0.1392	0.9903	0.1405
9	0.157	0.1564	0.9877	0.1584
10	0.174	0.1736	0.9848	0.1763

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}$$

$$\cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}$$

$$\tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$$



Trigonomic Functions

Applying the values from the example above produces very accurate results. Multiply the length of the wing chord by the Sine of the angle you want to achieve. Raise the leading edge by the result for positive incidence. The example below gives the measurement to raise the leading for a corresponding angle of incidence for a wing with a 12" chord:

$1/2^\circ = .10''$	$2^\circ = .42''$
$1^\circ = .21''$	$3^\circ = .63''$
$1-1/2^\circ = .31''$	$4^\circ = .84''$

The conventional location of the horizontal stabilizer (stab and elevator) and vertical stabilizer (fin and rudder) is at the aft end of the fuselage. These surfaces must be of adequate size to provide stability and controllability to the airplane. The area of the horizontal stabilizer, including elevator, should be at least 18% up to 25% of the wing area. The vertical stabilizer, including rudder, should be 5% to 10% of the wing area. A larger vertical tail section will improve yaw stability.

Primary control surfaces are the ailerons, elevator and rudder. The size of the control surface is described as a percentage of the entire horizontal and vertical stabilizer area. The ailerons should be 8% to 15% of the total wing area. The elevator should be 30% to 40% of the horizontal area. The rudder should be 25% to 40% of the vertical area. The size of the control surfaces can be much larger for 3D aerobatic designs. Scale models may have different values if maintaining scale fidelity.

The tail moment is the distance or length (L) between the aerodynamic centers (A.C.) of the wing and horizontal stabilizer. The aerodynamic center is typically located around 25% of the mean aerodynamic chord (MAC). The distance between the wing and stab aerodynamic centers should be at least 2 times the dimension of the MAC. A longer moment, i.e. 2.5 to 3 times MAC lengthens the fuselage behind the wing and provides for better (smoother) pitch control.

The length of the nose from the wing to the propeller is influenced by the weight of the engine (or motor) and needed space for the fuel tank (or batteries). A very long nose has negative effects on yaw stability. Use the MAC as a length reference. Locate the propeller thrust line at 1.2 to 1.4 times the MAC length, forward of the wing aerodynamic center.

Thrust angles can be built in to help offset torque and P-factor, and reduce pitch changes with power changes. Right thrust of 1° to 2° is typical for a standard clockwise turning propeller (as viewed from behind the prop). A high wing airplane will tend to pitch up as power is added. Down thrust of 2° will help reduce the pitch change. Some scale models may not allow for the right thrust offset, i.e. P-51. The vertical stabilizer can be offset up to 2° as on the full scale airplane, to compensate for torque and P-factor.

Secondary flight controls include flaps, spoilers, and speed brakes. Flaps are used to increase lift at low airspeed and reduce the stall speed. Partial flaps may be used for takeoff to reduce takeoff distance. Flaps allow for a slower approach speed and reduce the landing roll out. Spoilers and speed brakes are designed to create drag and may decrease lift on the wing. This can allow for a steeper descent or approach as needed. Fuselage drag brakes are used on some jet aircraft to control speed and-or approach angle while allowing turbine engines to remain spooled up for quick response if needed for a go-around.

The information discussed is meant to be a simplified summary of aircraft design factors. There is enough information for designing an RC model. It is not meant to be a full blown text on aerodynamics or full scale airplane design.

Visiting Tomcats and other fields

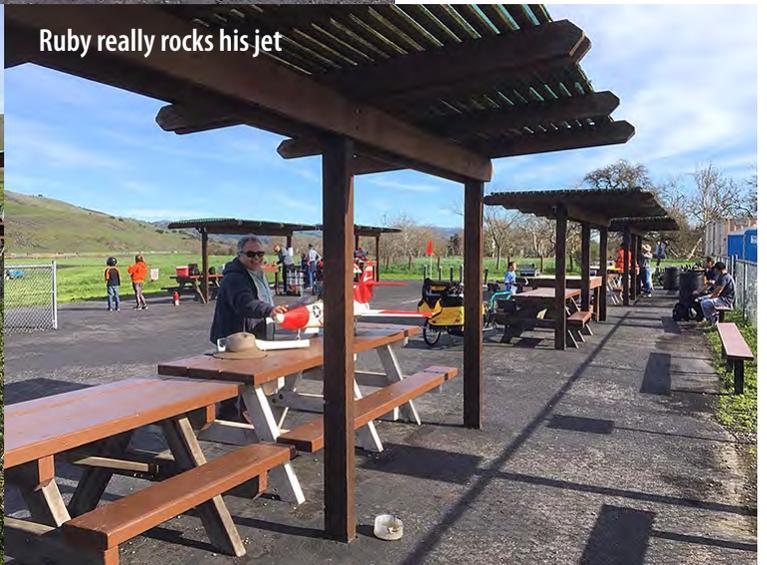


Old Radio Flyer wagons work great to get your models out the field



If you would rather ride your bike than walk, an arm off the seat post will pull the wagon just fine.

If you ask around, you should be able to find others to walk out with you.



Ruby really rocks his jet



Yes you can walk with the big gassers too



The long Walk - Feels much longer on the way back



WWII Aircraft Production – Facts and Figures

The United States produced more than 300,000 military aircraft between 1939 and 1945.

The B-24 bomber was built in greater numbers than any other aircraft type. A total of 18,481 were produced. They were built by Consolidated in San Diego and Fort Worth, North American in Texas, Douglas in Tulsa, Oklahoma, and by Ford in Willow Run, Michigan. Ford produced about half of all the B-24s that were built. At peak production, B-24s came off the assembly line at Ford at the rate of 1 per hour.

North American Aviation produced the largest number, more than 41,000 aircraft, which included the AT-6, B-25, and P-51. The P-51 Mustang was built in Inglewood, California (which is now LAX International Airport), and near Dallas, Texas. The P-51B and the P-51C are identical aircraft. The B model was built in California, the C model in Texas. The P-51K is the same as a P-51D except it used an Aeroproducts propeller instead of the Hamilton Standard propeller. More than 15,000 Mustangs were built. The California plant completed one airplane every hour at peak production in 1944

The Grumman F-6-F Hellcat was produced at only one factory in Bethpage, Long Island, New York. More than 12,000 airplanes were built. It was the only fighter to go through its entire production without design changes. The Hellcat accounted for 75% of all aerial victories in the Pacific Theater. It had an overall kill ratio of 19:1 for destroyed enemy aircraft per lost airplane: the highest of any aircraft type in WWII.

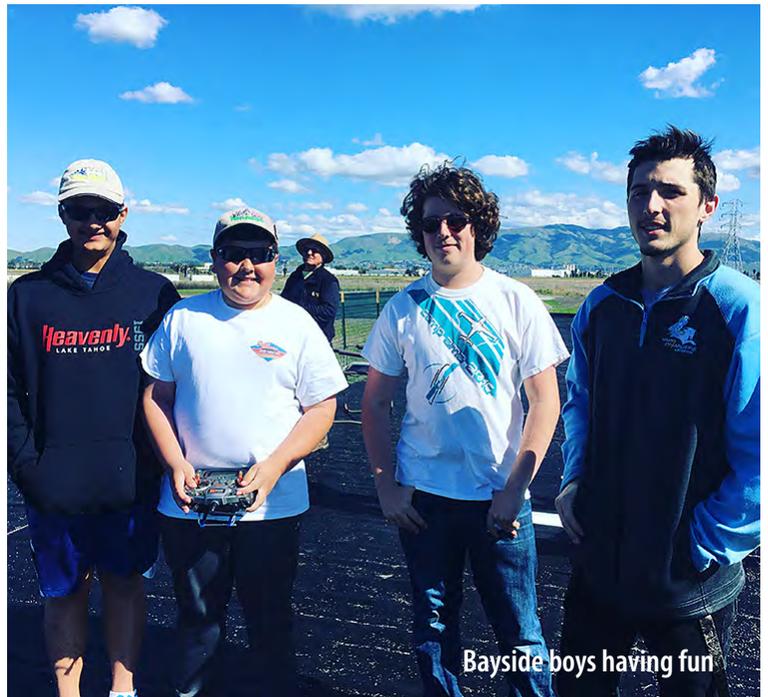
Lou Rodriguez



Not sure if this one is RC



Almost at the ranger station



Bayside boys having fun



Nate's ground crew knows how to pack a wagon



Alternative field



The crash did hurt, power problems electric Beaver



Nate & Jack at Bayside

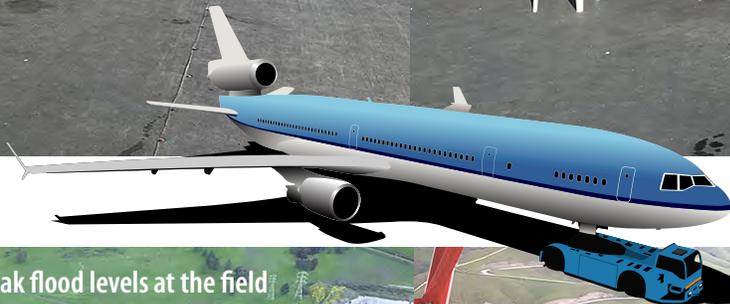


Watching others fly can get exhausting



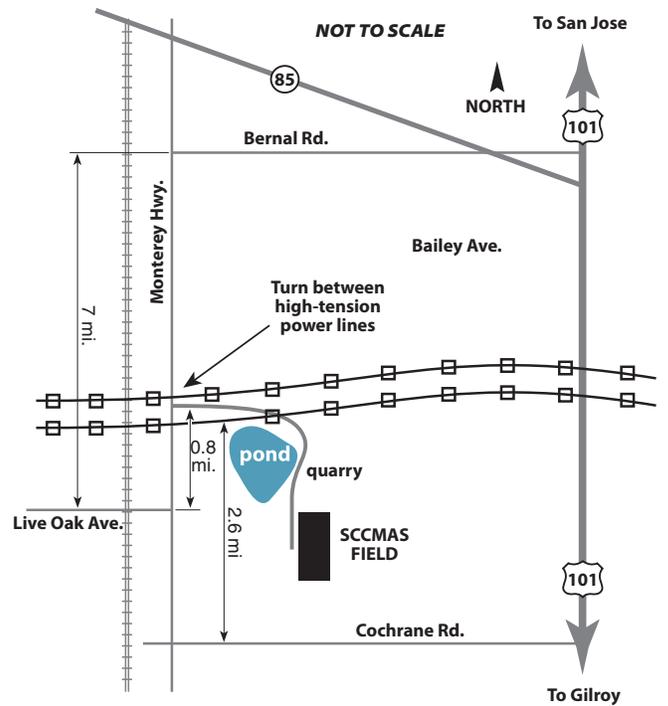
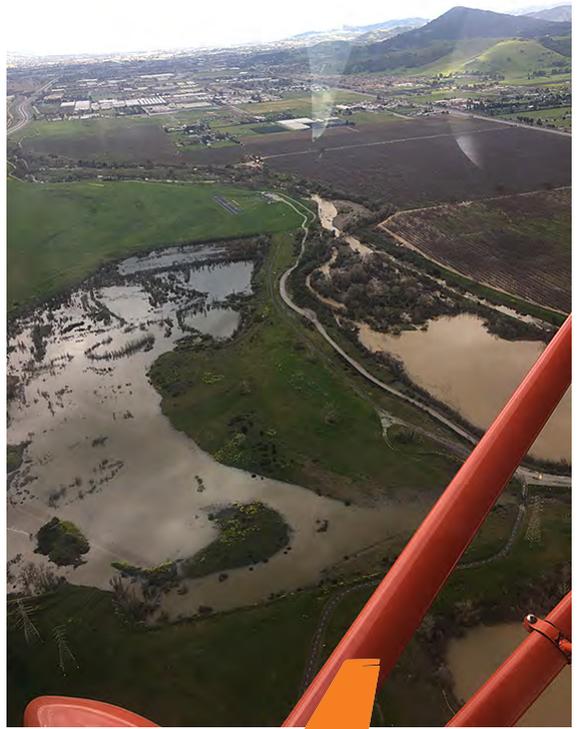
Multi story wagon





Peak flood levels at the field











Our team in Oakdale - Nice runway



Weather: 9:24 PM 34%
@weather.com

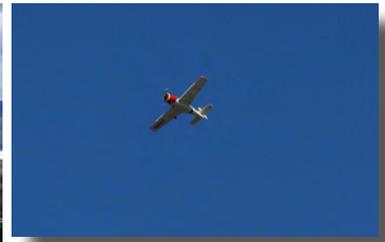
8:00 AM	Partly Cloudy	45
9:00 AM	Partly Cloudy	53
10:00 AM	Partly Cloudy	56
11:00 AM	Partly Cloudy	59
12:00 PM	Partly Cloudy	61
1:00 PM	Mostly Sunny	62
2:00 PM	Partly Cloudy	62
3:00 PM	Partly Cloudy	63
4:00 PM	Showers	63

Today Hourly Daily Local More

Field Access Road



Flying at Bayside



The argument over which TX brand never stops



Rob on the next mission



Hydration is a must



We know it's you Roger







Sia's F16 trying to simulate a submarine



The crew trying to figure out a way to salvage the F16



Design, Build, Fly Trials

Each year in April, the American Institute of Aeronautics and Astronautics (AIAA) hosts a Design Build Fly (DBF) competition for college teams. The location for the competition alternates between Wichita, KS, and Tucson, AZ. Each educational institution is allowed to have one team participate, and up to 100 schools from around the world apply. The competition consists of three flight missions, and some years includes a ground mission, to meet objectives representative of a certain type of aircraft. The type of aircraft on which the objectives are based varies each year, and this year, it's a tube-launched UAV. The objectives and rules can be found at: <http://www.aiaadbfg.org/Missions/>.

And each year in February, teams formed from students of Professor Gonzalo Mendoza's aircraft design course emerge from the depths of the SJSU engineering building, where they've been designing and building since early in the fall, and arrive at SCCMAS for a flyoff to determine which team will represent the school at DBF.

This year, four teams hiked into SCCMAS with their aircraft and support gear. Each of the teams made good use of the SCCMAS facilities to finish last-minute construction and modifications, and to conduct engine tests.

Professor Mendoza then performed a technical and safety inspection similar to that required at the DBF competition, and each team attempted to fly the missions.

One of the teams wasn't able to complete the technical and safety inspection, but three were, including one team that brought two aircraft: their first non-folding prototype, and a second prototype capable of being folded for storage in the tube.

Of the four planes, one didn't have quite enough power to get out of ground effect, and suffered some minor damage when it pancaked just off the runway. A second plane, with its wing reinforced by packing tape to provide strength, also crashed shortly after getting airborne, possibly due to wing failure.

The non-folding prototype, which was hand-launched as will be the case at DBF, flew well, demonstrating the basic design was flight-worthy. The folding prototype attempted a ground take off, but after getting airborne, experienced some roll stability issues, and crashed in the middle of the runway.

But it's still early – recent SJSU teams have built between two and six aircraft in order to fine-tune performance and weight in preparation for DBF. Thanks in part to the availability of a world-class facility like SCCMAS so near to campus, SJSU teams have placed in the top 10 for the past five DBF competitions, including first place in 2012 and 2016, and third place in 2014. Norio Eda, a SCCMAS member, was the pilot for 2012 and 2013, and is planning to return to Tucson to pilot this year's entry.

Jim Zumsteg





4 Sale



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