



# Propeller Teller

The Official Newsletter of the MARKS Club (Miniature Aircraft Radio Kontrol Society) - AMA Charter 133

## Moving D.J.'s old Shade to Greenspot



**Our moving ants (f.l.t.r): Glenn, Dennis, Rick, Erik, Sven, Nadia, and Andreas**

On a sunny and not too hot Sunday morning Andreas, his wife Nadia, Erik, Sven, Rick, Glenn, and I arrived at Rondy's Glass in San Bernardino. We were all excited and ready to start the process of moving the large and heavy metal pieces from the roof of a storage container to the ground in preparation of getting it loaded and tied onto Rick's flatbed trailer. Of course since the metal pieces had been on top of the

started moving the blocking items, other metal poles and an old chain link fencing (with the poles still attached and



spread out the length of the container!). We decided that the best way to handle the items on top was to move them to one end and try to get the aluminum sheeting off the top first. Apparently the metal sheeting had all of the seams covered with tar during the original build and when stacked up on the roof these many years the tar did its job and "welded" many of the sheets together. I am sure that

with the correct tools and time we will get them all separated but up on the top of that storage container that wasn't going to happen. The sheets are out of aluminum and roughly three feet by ten feet and they are not overly heavy by themselves. However, with the added weight of two or three metal sheets stuck together there was a real danger for the folks down on the ground. Fortunately we did not decapitate anybody!

After accomplishing that first part of our mission, the next phase involved passing down the heavy steel beam structure of the covering. Of course we again had to move all of the fencing and other things from one end of the container to the other before we could start with the heavy lifting. All in all we worked like a finely tuned team, all of the parts were taken off of the container (with zero injuries of any kind) and placed on the ground in preparation for our loading expert Rick. Rick knew what he was doing and the shade was loaded and tied in record time!



**A "family" picture after a job well done.**

When we arrived at the run-

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way we were pleased to see another group of members already there and just itching to assist with the unloading of the pieces and placing everything into our newest and largest storage container. Everything fit inside perfectly with a lot of room left over. With all of the additional help this part went really quick.

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container for more than eight years other interesting items had been placed on top of them. Erik, Sven and I climbed on top of the container and

## Member Section

### New MARKS Members

We have one new member, who has joined us during the last month.

**Sam Winkler**

**Welcome to the Club!**

### Birthday Boys

#### July:

Gary V. Lopatynski	7/2
John G. Skolnick	7/3
Booker T. Woods	7/5
Gordon E. Daniels	7/18
Paul T. Rudiger	7/19
Robert Boehm	7/25
Paul V. Bohler	7/26

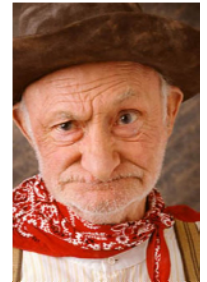
#### August:

Fred G. Pierce	8/6
Andreas Blaser	8/9
Steven D. Lumpkin	8/9
John I. Lewis	8/11
Jack Deal	8/12
Michael E. Carey	8/12
Tom S. Salmon	8/13
Sam Ramirez	8/18
Jerry G. Blake	8/22 (10x!)
Glenn Micklow	8/23
Jerry A. Boggs	8/23 (10x!)
Herman I. Buenbrazo	8/28
Ed Moore	8/30

*Congratulations and best wishes from the MARKS Club!*



*Note from the Editors:* This is a new section in our newsletter, where we want to welcome our newest members to the MARKS club and at the same time introduce them to the entire membership. The goal is to have a little story and maybe some pictures for all new members that join. – So if you are a new member, please send us some info about yourself and you will be featured in the next issue of the Propeller Teller.



*This could be you! →*

## Member Celebrations

### John Richardson

John Richardson, our former president, holder of various other club positions, and great helper on so many projects and Pat, his spouse celebrated their 50th anniversary this June.

**Congratulations John and Pat and thanks for all that you have done for the MARKS!**



### Update from D.J. Steir:

"Things up here in Sacramento are fine. We just returned from L.A. for Dennis' wedding. We had a great time and Dennis and his new wife Katie had a beautiful wedding. Now they are in Europe enjoying their honeymoon. Dennis is still flying all electrics and he is even designing small ducted fan aircraft.

I still work at R/C Country Hobbies having a great time. I work primarily at the electric aircraft section which keeps me very busy and I am learning a lot about all the different inner workings of electric airplanes and flight in general. If you need any info on electrics, just drop me a line.

A big "Hello" to everybody at MARKS and good flying!

D.J."

**Congratulations  
Dennis and Katie!!!**



## Member Projects

### Dennis' Contender Project (Part 1)

#### Summary



Top Flite reintroduced a new Gold Edition of the famous Contender. The finished product

may look the same as the original plane, but many changes have been made. The new Contender is lighter, stronger and easier to build, thanks to modern technology. But even so, much about the Contender remains the same.

Like the old, the new Contender uses balsa and ply construction, and Top Flite has included a very complete hardware package that contains pushrods, clevises, landing-gear hardware, control horns, nuts, bolts and even the adjustable motor mount. As usual, Top Flite has done a great job on both the plan and the instruction manual. The 32-page instruction manual contains more than 90 pictures to illustrate the construction process. The plan is full size and well detailed, and construction is done over it. A quick note: if you want to save the plan and keep it in good shape, use the clear backing from MonoKote to protect it; this material is resistant to

#### Let's get down to it!

Now that you have heard some of the official information this is what I found out. This is my first kit plane so I have no experience in building anything but ARF planes. When I ordered this kit from Tower Hobbies the most technical items I had was CA glue. I kind of went crazy and

bought a lot of building equipment, I started with the metal building board and magnet set up then four sanding blocks and everything else that looked neat from the catalog for building.



Everything arrived at the same time, I unpacked the magnet items and began assembling them per the instructions, I did not like the way that worked so I fine tuned the magnet set up with CA glue. I put all of the other building equipment in the cabinet until it was called for in the plans. I opened the box removed the plans and assembly book, looked at all of the sticks and flat pieces of wood and thought I would give all of this "STUFF" to Dion Reed to put together since he is a very good builder. But poor judgment took over and I decided I would give it a go.

I put the plans on top of the metal board then covered everything with wax paper. I found the items called for in the plans to start building the wing and so I commenced building. I discovered along the way that when you read the instructions and if you don't understand something then it is wise to stop and figure it out or maybe ask somebody—I did neither. I plowed ahead without a thought in my head except seeing this plane fly. I assembled and glued all of the wing parts up to the point of putting on the sheeting.

This is where I discovered the part I didn't know "and so skipped" was the piece of wood for the leading edge. Since I was way past that portion I remembered something Dion once said, "It's wood, make it do what you want it to do". I did some wood adjustments to the leading edge then put on the sheeting. I figured with extra sanding and putting on the covering the mistake will be hidden and I would not have to tell anybody about my mistake, maybe nobody will notice it, so keep this quiet.

This is the plane assembled and I have most of the covering on now I did have to cut the flap down quite a lot to make it fit correctly but everything else seems to fit now. By the next newsletter the plane should be complete and ready to fly if not flying already by then.



Just a couple of other notes I started building this plane about 12 months ago then stopped for about four months, now I work on it when all of my other planes are in good repair. The plans say the plane is a fast build and it probably is for a good builder but I still think the time they say is about 18 hours; I think 118 hours would be more like it. However, I am having a lot of fun with the project; if this one turns out OK then I may build a Skyraider for my next project. (dh).

#### SPECIFICATIONS

Model:	Contender
Manufacturer:	Top Flite
Type:	Advanced trainer
Wingspan:	53 1/4 in.
Wing area:	660 sq. in.
Weight:	6 to 6 1/2 lb. (5 lb., 11 oz., as tested)
Length:	49.58 in.
Engine required:	.40 to .60 2-stroke or .52 to .70 4-stroke

Radio required:	4-channel (5-channel with flaps)
Radio used:	Futaba 6-channel with 5 servos
Features:	All-wood construction with CAD-designed parts; full hardware package including rod-in-tub pushrods, wire landing gear and engine mount; decal sheet; excellent, illustrated instructions.
Comments:	Everything that made the original Contender favorite, plus modern advances in technology and construction that make it easier to assemble and more exciting to fly. This updated version will remind you of the good old days without making you long for them—the new Contender gives up nothing to the old version, and it gains quite a bit.

## Note from the Editor



To make the newsletter even better than it is now Andreas and I would like to see other members contribute as well. Since most of you fly RC planes, everybody should have some stories or anecdotes to share with the rest of the membership. We are not looking for Pulitzer Prize material just something interesting that you have experienced or have seen—It is also fine if these are stories of the past. If you send me a bare bones idea and a short story I can probably fill in the blanks with something from my

(vast) experience in RC flying :-)

The best and easiest way is to send an e-mail to newsletter@rcmarks.org, but you can also send me a letter or simply come to a club meeting and give me a copy of your adventure. Pictures are always nice too! (dh)

Thanks!  
Dennis

*“Send us your stories and adventures—it is always great to share what is happening in your workshop or at the field with the gang”*

## Model of the Month: July

At the July meeting we had four contestants participating at the Model of the Month competition. Plus two models were shown just for the fun of it. Paul Smith brought an old free flight plane also to demonstrate covering techniques that were used before the advent of iron-on plastic covering. The plane is an 81 inch wingspan A-2 class towline glider covered with the classic "dope and tissue" method. Paul explained that this was the lightest covering available with silkspan

being the next strongest and silk being the strongest but heaviest. Silk was used on RC and full scale airplanes. All of these materials required many coats of dope (clear lacquer) to seal them, which made this process quite labor intensive.

The plane Paul displayed was scratch built and based on his own design. This particular plane actually won first place in the Air Force Worldwide meet in 1966. – That is, the plane is 42 years old!!!

The next contestant was Don Gian-domenico with his first turbine jet, a "Boomerang" from Elan Jets. The plane has proven to be an exceptional introductory turbine powered jet. Its predictable



**Paul demonstrates his free flight glider champion. 42 years old and not a wrinkle—Wow, what a covering job!**

**The glider placed 3rd.**



**The Boomerang ready for takeoff in the desert.**



**Don holding his awesome jet upright to show the details and the size of his Boomerang Elan Turbine jet.**

**The jet placed 1st.**

flight characteristics and seemingly unlimited aerobatic capabilities leave Don eager to get a lot of stick time. He has found this jet to be one of the easiest planes to land and he said that he has yet to find any bad tendencies. The 21 lbs Boomerang is equipped with Robart retracts and BVM sport wheels and brakes. The Jetcat P-120 turbine propels the 84" wingspan

## Model of the Month (Continued)

jet with exceptional acceleration and unlimited vertical performance. The jet also features eight Futaba BLS451 brushless servos which are coupled with a Futaba FASST 2.4 spread spectrum radio system. The radio gear is powered by a regulated 5200 mAh lithium-ion system which has fail-safe redundancy. Don highly recommends the Elan to any RC pilot that considers getting into jets as it truly is a dream to fly.



**Steven presents is foam F-16 jet from Phase 3. It has an electric ducted fan and is supposed to fly very good.**

### The F-16 placed 3rd

Steven Lumpkin was next in the queue to present a very different kind of jet, one that can easily be transported in the back of a car. The foam jet Steven presented was a EF-16 produced by phase 3. The plane is sold at Hobby People for about \$140. It comes with a brushless motor and a fan unit as well as a 30 Amp speed control. The plane was easy to assemble and the provided instructions included many color pictures which made the building part quick and painless. Steven used 2 Hitec HS55 servos and a 3 channel radio for guidance. The plane hasn't been flown yet. However, and in light of Steven's recent fateful P-51 crash he is thinking of using his Airtronic radio instead of the equipment that came with the jet. Power for the brushless motor is provided by a 2100mAh, 3 cell LiPoly battery.

One could almost speak of a tradition when Sanford brings another electric model for the Model of the Month contest. This time he came with two very special planes. The first "plane" Sanford presented was a flying RC Bald Eagle. The bird is made completely out of foam. In its nose, ahhh .. beak there is a small brushed electric motor. Guidance is provided by a V-tail and two servos. Sanford said that the plane/bird flies quite well and performs all scale figures. It has a tendency to stall out of a loop on its top point but then again real Eagles don't perform too many loops either.

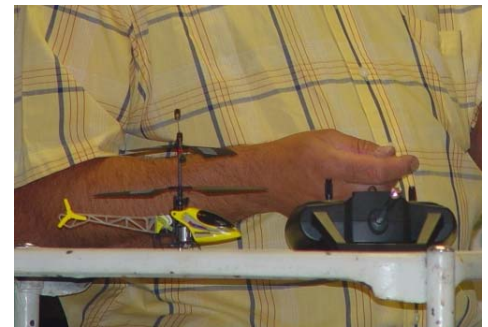


**Sanford holding his EPP foam eagle. So far it has been flying great and has never been shot down by a real bird of prey!**

### The Foam Eagle placed 2nd

The second plain that Sanford brought with him was a micro shoulder wing plane that easily flies in a living room. It performs ok outside as well, as long as the wind does not pick up too much. The plane has a tiny motor and special servos and a receiver to save weight. The plane came with a radio and was an RTF.

The last plane/heli was demonstrated by George Manning, who performed a little



**George provides the inside scoop of his micro helicopter after a neat demo in the meeting room.**

micro air show in our meeting room. George said that this helicopter flew great out of the box, just as long as it is not excessively flown, because this seems to burn the motors. Yes, there are two motors that drive the two main rotors. A 2.4 GHz radio that came with the helicopter is used to control the aircraft. (abl, Paul Smith, Don Giandomenico, Steven Lumpkin)

## Congratulations and thanks for sharing your great "flying machines"!

### Moving D.J.'s old Shade to Greenspot

*(Continued from page 1)*

This left us a lot of time to check out the flying models our members had at the field. Our next part of this project will be to assemble the steel frame. If we use the 2X4 wood idea the assembly will go very fast. This way the shade will be kind of portable when it's time to move it to the new location. After the frame is assembled Dion and I will start painting the framework; this paint dries rather quickly and we could probably start putting the metal sheeting up on the same day. Once the weather forecast promises a "not-so-hot" weekend, we will assemble another work crew to setup the shade. None of the assembly task is going to be strenuous work and if we get a good member turn out, then the whole thing should be assembled in a matter of a few hours, we just need many helping hands. (dh)

## President's Corner



Hello everybody,

Here are a couple of items on my current MARKS radar screen that I would like to share with you.

### Study in Greenspot

The text below is from an e-mail that we sent to the entire membership on June 28th.

"As indicated earlier, the San Bernardino Valley Water Conservation District (SBVWCD) is currently running a study in the Greenspot area. The goal of the study is to obtain an accurate assessment of the Geology and Hydrology beneath the borrow pit. For this purpose an external company (MWH Americas, Inc.) takes soil samples, drills test holes, and digs trenches in the wider perimeter of the borrow pit. The sampling sites are marked and they should be left undisturbed, this is very important for that study. I know that this is less an issue for you (our members) as for unauthorized "visitors" that sometimes flock the pit during off hours.

If you see people messing around in this context please advise them to not do so if you can and if the situation allows it. Otherwise please report such incidents to me and I'll forward it to the appropriate people. Taking pictures, making notes or writing down number plates is always a good idea too. On the back of your membership cards is additional emergency contact information (E.g., Highland Police etc).



The MWH work crews are working from 6:30 in the morning to 16:00 in the after-

noon, from Monday to Friday. The current project plans calls for 5 to 7 deep soil samples which will take anywhere from 2 to 6 weeks. The reason for this is that the underground contains very unpredictable material - just look at the huge granite boulders that are "decorating" the pit!

Finally, if you go flying during the week, you might be approached by one of the MWH employees who will ask you to sign a waiver. This is ok and done out of legal reasons; you basically say that you are aware that they are working there and that you will take precautionary measures not to injure yourself, for instance, by NOT stepping in a ditch that they dug to take a sample. - Basically this is all common sense.

At one point MWH will be sampling under our flight path. Out of obvious reasons our field will be closed during that time. Currently we do not yet know when that is the case but such information will be posted on our web-site, as soon as we know. The tentative time is "sometimes next week". Again this affects only Monday to Friday."

### Container and Shade move to Greenspot

June was moving month for MARKS as you can easily see from the cover picture which has again no model airplane on it. However, we are making good progress and all the various puzzle pieces for a good field start to come together. On June 21st we moved our new 24' container from Yucaipa to Greenspot and a week later we did the same with our shades that were stored for many years with Rondy from Rondy's Glass in San Bernardino. The shades were built by D.J. Steir and other members and served the club for about two years before they had to be dismantled and put into storage, because that field (CalMat ?) was lost due to continued development.

The next big task is to setup the shades. We want to do this such that we can later easily disassemble the complete structure and transport it to the new site. Dennis Hammarstedt came up with the idea to use treated 2x4 wood to connect the steel beams. The 2x4s fit almost per-

fectly into the cut beams and we can easily secure them with the beams using regular bolts. Therefore, no welding is required and we can take the structure apart in no time when we move the field.



Other items that we need for setting up the structure are steel cables and parts to connect the shade structure with the containers which we will be using as anchors. If somebody has connections to a supplier of steel cable (approx 1/4") please let me know. Otherwise we will purchase the necessary parts from Grainger in Riverside.

The current plan is to build the shade structure in two days: On the first day we setup the frame, connect it to the containers, clean the beams and paint them. Then on day two we attach the metal sheeting, and eventually the slide-able portion of the shades.



We are planning to go ahead with assembling the shades sometimes early September, on a weekend that is on the cool side of the spectrum. - If you would like to help out please let me know - you have heard me say that before so here it comes again: With helping out you are not only promoting the club and its cause but you

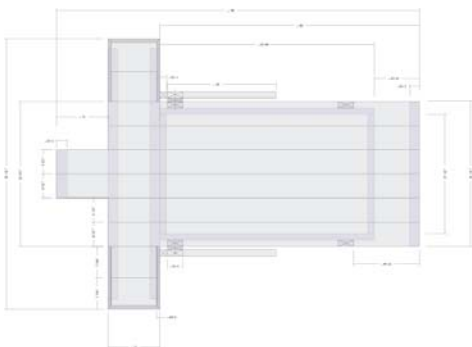
## President's Corner (Continued)

are also participating in cool projects that you can be proud to be a part of. There is nothing cooler than knowing that you too made this possible!

The MARKS Club, that is Roger Foor, presented Rondy of Rondy's Glass with a small gift when Roger got the key to Rondy's property. We needed the key to enter the premises on a Sunday to get and move the shades to Greenspot. I don't know exactly how long the shades had been stored at Rondy's place but it has been more than eight years for sure. So in the name of all members: "Thanks a lot Rondy!" The other party that deserves our thanks is Mazzulla Grading Inc. from Highland. Similar to previous occasions, Mazzulla Inc. allowed Rick Inlow to use their equipment free of charge. Without such public contributions we could not have moved neither our new container nor our shades! – So thanks a lot!

### Table finally on line

It took a while but the plans and a description how to build the MAKRS setup table is finally ready. Everything is online and can be downloaded. This is the easiest and quickest way. If you do not have Internet access you can call me and I can send you a copy. So far three members/teams have signed up to build a table (remember you can get a free one-year membership if you build a table) Jack Deal, Art Doud, and Dennis Hammarstedt/Dion Reed have signed up. That means also that we need three more tables! – First come, first serve!



Here are the links to the various documents (Yes, it matters if the letters are caps or non caps):

#### Drawings:

[http://www.rcmarks.org/Documents/MARKS\\_SetupTable\\_Plans.pdf](http://www.rcmarks.org/Documents/MARKS_SetupTable_Plans.pdf)

#### Instructions:

[http://www.rcmarks.org/Documents/MARKS\\_SetupTable\\_Instructions.pdf](http://www.rcmarks.org/Documents/MARKS_SetupTable_Instructions.pdf)

#### Pictures:

[http://www.rcmarks.org/Documents/MARKS\\_SetupTable\\_Pictures.pdf](http://www.rcmarks.org/Documents/MARKS_SetupTable_Pictures.pdf)

If you have corrections, additions, etc. please let me know and I will update the docs. I can also send you the originals so you can add, edit, or append yourself. This is work in progress and it would be great if we could "perfect" this table!

### On-Line Inventory

As our club grows we acquire -like any good household- more "stuff". Be it a water pump, a windsock, a radio scanner, or ... you name it. Many times these items that were bought with club money end up at a members place being used a couple of times for the club before they fall into oblivion. This is most often not out of bad intent but caused by the speed with that we travel through time. There is just too much to do and too many things to keep in one's head.



However, because these are actual club assets it seems we need a better system to track our inventory. For this purpose I have started an Inventory List that is accessible to every member with Internet access. Such we know where to look for things without starting a full blown investigation and we know where our money goes.

The link to the Online Inventory is:  
[http://www.rcmarks.org/MembersOnly/MARKS\\_Club\\_Assets.html](http://www.rcmarks.org/MembersOnly/MARKS_Club_Assets.html)

The idea is that our Club Secretary maintains this list and that all items that are more than \$20 worth are registered. This does not include supply items used for maintenance. Like everywhere else common sense will be used.

### What to do when ...

"What do I do if I encounter people that are in the Greenspot borrow pit that (I think) do not belong there?" Sounds like an easy question to answer but it actually isn't.

As a rule nobody should be flying alone at our Greenspot field, except if flying small electric planes and flying exclusively inside the pit. There are a couple of reasons why we put this rule into our flying site rules, one being that of our personal safety. Operating an RC model has its dangers, and most of us have either experienced the joy of making contact with a fast rotating piece of wood or plastic (also known as "propeller") or found out that an engine that runs is not just only making noise but can also be quite hot to touch. Another safety reason is that of animal interaction. There *are* mountain lions out there, and although they prowl mostly at dusk, dawn, or at night it is a good idea to be aware of them. Rattlesnakes have been seen in the pit area as well. The more people are at the field the less likely something is going to happen and the more likely it is that if something is happening it has not severe consequences. – Remember you have all the necessary emergency numbers of the back of your membership card.



Now back to the original question: How to deal with people that are in the borrow pit illegally? – Incidentally (and this is the link to the excursion above), what is true for wildlife is actually true for people that are in the pit without permission too: The more members are on the field the less likely there will be any interaction with

## President's Corner (Continued)

bikers, ATV drivers, wild truck drivers etc. So if there are a lot of us there then we'll probably only see people from afar and that is it. – In such a case the most appropriate thing to do is probably to write down what you are seeing (E.g., 3 moto cross bikes drove around the pit rim ...) include a time and then send an e-mail to me and I will add it to our log. If you can make a picture then that is helpful too.



Another scenario (and I had that happen to me before): I was out there with Erik and Sven when a kid and his dad came by with their two moto cross bikes. They came to watch our planes fly and after that we chatted a bit about the models, the

hobby, but at one point also about the fact that they were – how should I put it – not supposed to be in the pit. In general nobody likes to hear this but what you can tell people like this is that this is primarily out of legal and insurance reasons and that we (MARKS) have both a permit to be there and also insurance for us as well as for the parties from whom we have the permits. You could tell them that it is probably wise and in their own interest to drive in the Santa Anna Wash or wherever off-road driving is not prohibited. Using such an approach you can offer help and advice instead of simply telling them to “buzz off” – Like in the case above, if they are gone try to recollect what you saw, what they and you said, write it down and send me an e-mail and I'll add it to our log. – Most people are reasonable and get the point. And if not ... we have a record of the incident.



Other case: You are flying with a buddy when suddenly a bunch of ATVs show up and drive up and down the runway, doing stupid stuff, such as, wheelies, burn outs etc. In such a case it is best if one person calls police immediately (Highland or 911 - again: the numbers are on the back of your membership card. The various branches of local law enforcement have all keys, they know where we are, and what we do) while the other person does something to distract the intruders and, -if possible-, takes some pictures. The first priority, however, is to be safe. People behaving like this are very likely ignorant and any discussion is probably fruitless and better left to professionals, such as, law enforcement. Another option is to call the Redlands Police and ask them to send their plane (a white and light blue Cessna 172) over our area. The Redlands Police Emergency number is (909) 793-1911 – we will add that number to the 2009 membership cards.



In the unlikely case that you feel threatened or see massive violations, don't hesitate to call police. Examples are: Others start driving through the bee hives, destroying property (E.g., our field, construction equipment, containers, port a potties, signs, etc.), if you see people shooting guns, people making races across the runway, full scale airplanes (Ultra Lights) landing one our runway, people driving\behaving recklessly, tagging rocks, or making fires. This is of course not a complete list but I think you get the picture.

The good news is that the last case is very unlikely, however, as stated above. Having a plan B and knowing what to do in difficult situations is always a good idea.

In Summary: If people come to the field, treat them friendly; most people just want to watch us play. If you see an opportunity let them know that as long as they

stay with you as your visitor then they are fine, but tell them also that the rest of the borrow pit is off limits and that they are trespassing in that case. State as the main reason for this, liability issues of the Water District. If they are truly interested in our activities they should setup a time with you to come back or check with one of the officers. Our web address for more information is written on Woody Mummery's sign on the container. Tell them that at one point in the near future we will have events that are open (and free) for the public and that they are welcome to come back then. You can take their e-mail address or address so we can notify them for that purpose.

### Confirmation Letter from IRS

This month we received the letter from the IRS confirming our non-profit public status (501(c)(3)). We now have the same status as PBS, the Red Cross, and other not for profit organizations. What that means for you as a member is that you can deduct your annual club dues from next year's income tax like you would do with any other charitable donation. This is also true for contributions or donations that you have made to MARKS starting January 23rd 2007.

Thanks for reading that far and happy flying!

Your MARKS President,  
Andreas

## Solution to last Month's Picture Quiz

Here is last month's mystery picture and the full image. The first (and only ...) member to figure out the correct airplane type, a **Northrop F-5E**, was (**again!**):

**Joe Augnino**

**Congratulations!**

Joe seems to be *the man* regarding aircraft recognition!

Below is some information about this interesting plane.

The sources:

[http://en.wikipedia.org/wiki/Northrop\\_F-5](http://en.wikipedia.org/wiki/Northrop_F-5)

[http://www.militaryfactory.com/aircraft/detail.asp?aircraft\\_id=159](http://www.militaryfactory.com/aircraft/detail.asp?aircraft_id=159)

### Northrop F-5

The F-5A/B Freedom Fighter and F-5E/F Tiger II are part of a family of widely used light supersonic fighter aircraft, designed and built by Northrop in the United States, beginning in 1960s. Hundreds remain in service in air forces around the world in the early 21st Century, and the type has also been the basis for a number of other aircraft.

The F-5 started life as a privately-funded light fighter program by Northrop in the 1950s. The first generation F-5A Freedom Fighter entered service in the 1960s. Over 800 were produced through 1972 for U.S. allies during the Cold War. The USAF had no need for a light fighter, but it did need a trainer and procured about 1,200 of a derivative airframe for this purpose, the T-38 Talon.



The improved second-generation F-5E Tiger II was also primarily used by American Cold War allies and, in limited quantities, served in US military aviation as a training and aggressor aircraft; Tiger II production amounted to 1,400 of all ver-



sions, with production ending in 1987. Many F-5s continuing in service into the 1990s and 2000s have undergone a wide variety of upgrade programs to keep pace with the changing combat environment. The F-5 was also developed into a dedicated reconnaissance version, the RF-5 Tigereye.



#### Design and development

Originally designed by Northrop (designated N-156) as a low-cost, low-maintenance fighter, there was little market for such a craft. It was designed around a pair of afterburning versions of the General Electric J85, which was originally designed to power the tiny McDonnell ADM-20 Quail decoy then carried by the B-52 bomber. This requirement created a very small engine with a very high thrust to weight ratio. The U.S. Army expressed interest in it for ground support, but operating fixed-wing aircraft was a task largely taken over by the U.S. Air Force. The Air Force would neither agree to operate the N-156 nor to allow the Army to operate fixed-wing combat air-

craft (a situation repeated with the C-7 Caribou).

When the Military Assistance Program under the Kennedy Administration needed a low-cost fighter for distribution to less-developed nations, the N-156F was at the top of the pile, and subsequently became the F-5A.

#### F-5E/F Tiger II

In 1970 Northrop won a competition for an improved International Fighter Aircraft (IFA) to replace the F-5A. The resultant aircraft, initially known as F-5A-21, subsequently became the F-5E. It was lengthened and enlarged, with increased wing area and more sophisticated avionics, initially with an Emerson AN/APQ-153 radar (the F-5A and -B had no radar). Various specific avionics fits could be accommodated at customer request. A two-seat combat-capable trainer, the F-5F, was offered. Unlike the gunless F-5B, it retained a single M39 cannon in the nose, albeit with a reduced ammunition capacity. The F-5F was armed with Emerson AN/APQ-157 radar, which is a derivative of the AN/APQ-153 radar, with dual control and display systems to accommodate the two-men crew, and the radar has the same range of AN/APQ-153, around 10 nm. A reconnaissance version, the RF-5E Tigereye, with a sensor package in the nose displacing the radar and one cannon, was also offered. The latest radar upgrade included the Emerson AN/APG-69, which was the successor of AN/APQ-159, incor-

## Solution to last Month's Picture Quiz (Continued)

porating mapping capability, however, most nations chose not to upgrade due to financial reasons, and the radar only saw very limited service in USAF aggressor



squadrons and Swiss air force.

The F-5E eventually received the official name Tiger II. The F-5E experienced numerous upgrades in its service life, with the most significant one being adopting a new planar array radar, Emerson AN/APQ-159 with a range of 20 nm to replace the original AN/APQ-153. Similar radar upgrades were also proposed for F-5F, with the derivative of AN/APQ-159, the AN/APQ-167, to replace the AN/APQ-157, but was never carried out.

Northrop built 792 F-5Es, 140 F-5Fs and 12 RF-5Es. More were built under license overseas: 56 F-5Es and -Fs plus 5 RF-5Es were manufactured in Malaysia, which plans to sell the aircraft after upgrading them; 90 F-5Es and -Fs in Switzerland, which currently leases some to Austria to bridge the gap between the retirement of the Saab Draken fleet and the delivery of new Eurofighter jets; 68 in South Korea,



and 308 in Taiwan.

The F-5 proved to be a successful combat aircraft for US allies, but never entered

front-line service with the US due to diverging priorities of the US services. The USAF did adopt the T-38 Talon trainer version of the airframe as the world's first supersonic trainer, and the design would be the starting point for the YF-17, which was developed into the F/A-18 Hornet. Although the F-5 was a lightweight fighter, its descendant, the F/A-18E/F Super Hornet, is a relatively heavy multi-role aircraft.

Various F-5 versions remain in service with many nations. One NASA F-5E was given a modified fuselage shape for its employment in the Shaped Sonic Boom Demonstration program.

The first contract for the production F-5A was issued in 1962, the first overseas order coming from the Royal Norwegian Air Force in February 1964. 636 F-5As were built before production ended in 1972. These were accompanied by 200 two-seat F-5B aircraft. These were operational trainers, lacking the nose-mounted



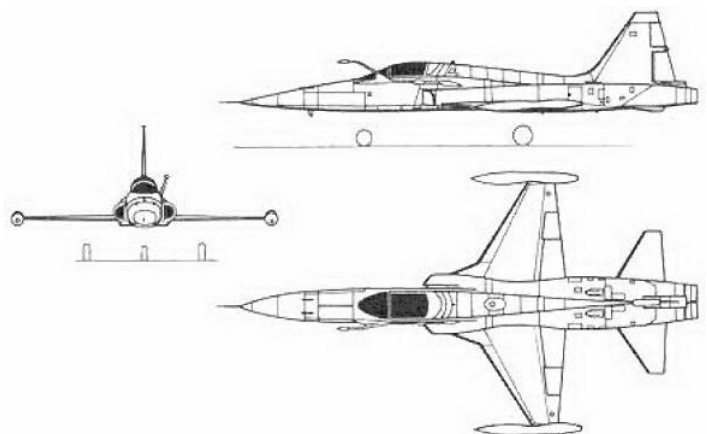
cannon but otherwise combat-capable.

In October 1965 the USAF began a five-month combat evaluation of the F-5A titled Skoshi Tiger.

Twelve aircraft were delivered for trials to the 4503rd Tactical Fighter Wing and redesignated as the F-5C. They performed combat duty in Vietnam, flying more than 3,500 sorties from the 3rd Tactical Fighter Wing at Bien Hoa in South Vietnam. Two aircraft were lost in combat. Though de-

clared a success, the program was more a political gesture than a serious consideration of the type for U.S. service. From April 1966 the aircraft continued operations as 10th Fighter Command Squadron with their number boosted to seventeen aircraft. (Following Skoshi Tiger the Philippine Air Force acquired F-5A and B models in 1965, putting twenty-three into service. These aircraft, along with remanufactured F-8 Crusaders, eventually replaced the F-86 Sabre in the air defense and ground attack roles.)

In June 1967 the 10th FCS's surviving aircraft were turned over to the air force of South Vietnam, which previously had only A-37 Dragonfly and A-1 Skyraider attack aircraft. This new VNAF squadron was titled the 522nd. The president of Vietnam had originally asked for F-4 Phantoms used by the Americans, but the VNAF flew primarily ground support as the communist forces employed no opposing aircraft over South Vietnam, MIG or otherwise. Ironically, when Bien Hoa was later overrun by Communist forces, several of the aircraft were captured and used operationally by the NVAF, in particular against Khmer Rouge. In view of the performance, agility and size of the F-5, it might have appeared to be a good match against the similar MiG-21 in air combat; however, US doctrine was to use heavy, faster, and longer-range aircraft like the F-105 Thunderchief and F-4 Phantom II over North Vietnam. Several of the F-5s left over from the Vietnam war were sent to Poland and Russia, for advanced study of US aviation technology, while others were decommissioned and put on display at museums in Vietnam.



## For Sale!

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### FOR SALE

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## Aviation Related News from the Web

What to do if you have a surplus radial engine at your hands, have some spare time, and know how to weld? - Build an awesome looking chopper! (Roger Foor)

### Airplane Squawk

**Tower:** "Delta 351, you have traffic at 10 o'clock, 6 miles!"

**Delta 351:** "Give us another hint! We have digital watches!"

**Tower:** "TWA 2341, for noise abatement turn right 45 Degrees."

**TWA 2341:** "Center, we are at 35,000 feet. How much noise can we make up here?"

**Tower:** "Sir, have you ever heard the noise a 747 makes when it hits a 727?"



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**MARKS Club Motto**

"MARKS - Powered by RC Enthusiasts!"

We are still looking for a good motto for our club. So scratch your heads and think of something, positive, and original that we could use here. Send your ideas to Dennis ([newsletter@rcmarks.org](mailto:newsletter@rcmarks.org))



M.A.R.K.S. stands for Miniature Aircraft Radio Kontrol Society – Our club has been founded in 1965 and has been a chartered club with the AMA since 1967. Since 2006, the MARKS Club is an incorporated organization with the State of California and since January 2008 MARKS is a tax exempt non-profit organization under IRS Tax Section 501(c)(3).

Our goal and vision as an organization is to the promotion of a safe, convenient, and cooperative pursuit of the sport of radio controlled aircraft as well as the fostering of talented modelers to compete on national or international level. In this context, the MARKS Club wants to provide a fitting framework for recreational and competitive activities involving any type of radio controlled aircraft and thus enriching the variety and the social environment of our local communities. The MARKS Club is open to everybody interested in model aviation. Emphasis is given to the introduction and education of the younger generation emphasizing values, such as, responsibility, good judgment, comradeship, teamwork, persistence, and technical skills specific to aviation.



Behind our name there is an active RC Model club that is located in the San Bernardino - Redlands - Highland area in Southern California. We have currently about one hundred members, flying everything from electric slow flyers, over helicopters, IMAC planes, and scale planes to fast turbine powered jets.

The Last Page

The Glimpse Ahead

Please keep on reading your e-mail and check our website regularly—this is the fastest and most efficient way for us to inform you about what is going on. If you have spam blockers please allow all e-mails from the @rcmarks.org and @esri.com domains.—Thanks.

Picture Quiz

What is the name and type of this airplane? - Please send your answers to [newsletter@rcmarks.org](mailto:newsletter@rcmarks.org) and we will announce the first three members/readers that guessed correctly. (editors)



July 2008						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August 2008						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Important Dates:

**There is no August Meeting**

Next Meeting:

Highland Discovery Night (4:00PM—10:00PM)

Next Pylon Race

Setup of shade structure

Construction Taxiways

Fun Fly & BBQ with guests

**Summer Break!**

Thursday, Sept 11th

Saturday, Sept 13th

Sunday, Sept 14th

TBA

TBA

TBA

If you would like to have your events listed here please send an e-mail to [newsletter@rcmarks.org](mailto:newsletter@rcmarks.org).