

# ❖ Tri City Sky Busters ❖

Volume 5 Issue 1

NAR # 535

March 1999

## Aerotech J390HW Hybrid Review *by Michael P. Ray*

## Hybrid flight data

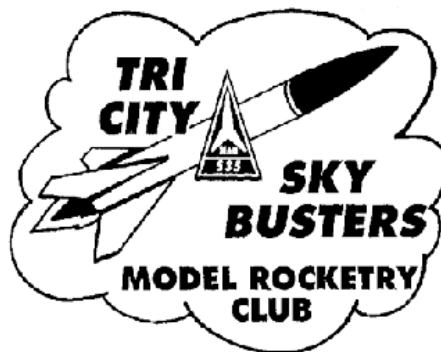
Well its was SUNDAY morning at NARAM-40. The weather condition were overcast, about 95°. Hot to say the least. Well it started with the loading of the Nitrous flight cylinder. I got 280 cc in the cylinder. Not a full load but all that would go in that day. Parts of the motor went ok. All parts fit good. Got the igniter started, added a cap of masking tape to it, put a little black powder in it, and put in the motor. Got the two ejection charges ready to go. Put most of it together and worked over to the check in line. Well the rocket is a 4 in Sandhawk that I made from Red Arrow tubing and plywood. It is over 10 feet long and with the motor it's over 13 lbs.

Well, the long wait till it was Michael's and my turn to put on one of the HI power pads #19. The count down was 5,4,3,2,1. Then, as soon as they hit the switch the Sandhawk was on its way. That motor came up quick. We lost sight of it when it tore the clouds; then no pop. I saw it in a flat spin and about 500 feet down range . I said "Come on, baby, pop", but it was not to be. Well, it hit the ground and the main finally went. I lost about 18 inches of tubing but its ready to go again.

Post flight I did not know what went wrong with it. The Cambridge accelerometer was off. Well, to my surprise when we got home and I downloaded it went 3405 feet up 12.06 g's, 342.01 MPH. Burnout was 713.64 feet, Motor burn time was 2.45 seconds, not the 3.5 like it should be, but it was a good straight up flight any way.

I would like to thank the help I got at NARAM-40, especially Kreig

Williams and Tom Hoelle the people that was there lending me the gas (N2O) to go. I would do it all again just to see if I could get a full burn of that motor. Just this time I hope I get some recovery system working. I think I found the problem with the eject charge. It was a bad connection at the block. I had used to connect the charge to the Cambridge, The wire had come out of the block and with the spin on the way down there was a vacuum in the body of the Sandhawk. I am including a picture of the Sandhawk taken at approximately 30 feet and at the speed of 104 MPH. That's My son Michael and I at the pad getting it ready to go. Also the data from the accelerometer and a plot on that motor. The photographer was Kreig Williams.



As part of the article that Michael wrote for this newsletter, he included printouts of data downloaded from an on-board accelerometer. These data graphs are shown on page 3. The top graph is the thrust curve for the motor. The bottom graph shows acceleration, velocity, and altitude during the entire flight of the Sandhawk.

Michael also sent me several pictures of the Sandhawk. These can be seen on page 4.

My thanks to Michael Ray for providing me these materials for inclusion in the newsletter.

## Club Hybrids???

The subject has come up several times in the past, and we never really gave it much thought. But with the recent BATF rulings regarding storage and use of all motors H impulse and higher, the idea of the club purchasing the support equipment for hybrid launches has come up again. Several people I have talked to would like to use hybrid motors, but the cost of getting all the necessary equipment to support hybrids is quite high.

So I am going to ask all of you, is there enough interest in hybrid motors, and could we come to a consensus about which system (Aerotech or Hypertek) to buy? I would like to hear from anyone with an opinion on this subject. Both systems require some fairly expensive ground support equipment that could be bought by the Sky Busters.

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## Message from the President

Hello again everyone. It has been quite a while since we put out a newsletter. This is the first one for 1999 and as I write this, we are approaching the last days of March. The reason that we have not published any newsletters is that I have not received any articles from the Sky Busters members. I received one article in the past twelve months. This was from Michael Ray. Some of you may know Michael from our launches last year. He drives all the way up from W. Virginia to attend our launches. This shows his dedication to the hobby. When I talk to people in person or on the phone, I hear of lots of rocketry projects going on; kits being built, preparations being made for a Level 2 certification, etc. Please write a short article describing the project or kit that you are working on, and I will include it in a future newsletter.

Enough said about that, lets move on to the business at hand. Spring is approaching here in Northern Ohio, and we are preparing for the coming rocketry season. I don't think we have had a successful launch since November last year, so I know we are all itchin to get out and fly.

With the newly formed Northern Ohio High Power (NO HOPE) Tripoli prefect now scheduling launches, there is no longer any excuse to not go for that NAR or Tripoli level 1 or 2 certification. I am sure that between both clubs, there will be plenty of launches to satisfy everyone. We have already run into launch schedule conflicts, as there is a launch almost every weekend.

As we start the new launch season, I would like to remind everyone that our organization is run entirely by volunteers. We could always use an extra hand anytime we get together; whether it is for a meeting, a launch, or any other club function. Next time

you are at a launch, help set up or tear down the range equipment. Give up an hour out of your launch day to sit at the LCO (Launch Control Officer) table, or take a turn at being the RSO (Range Safety Officer). We could always use the extra help, and you would be giving something back to the club.

The club could also use donations to help cover costs of operation. It does not need to be cash. Les Kramer donated a QuadCon (4 pad) launch controller last year. Matt Hudak helps out by building or fixing our launch rail and launch pads. Each of us needs to decide what we can give to contribute to the club.

Hope to see many of you at the

## And from the First Lady

*By Linda Bade*

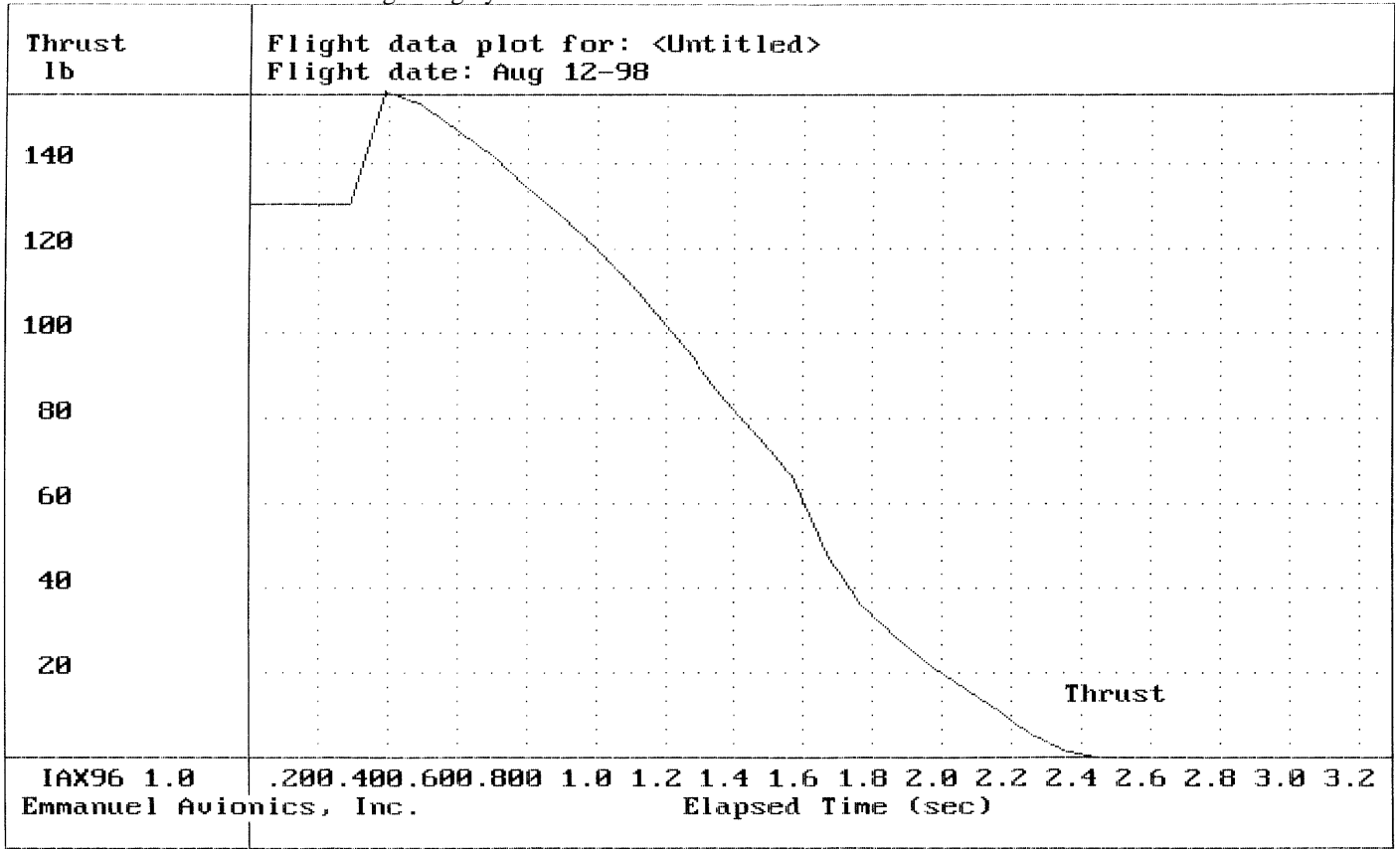
Happy Spring Rocketeers!!! I'm sure by now the blood has thinned and started pumping from your long winter's naps. I'm sure by now some of these sunny weekdays have caused you to stop work and start dreaming. I'm sure by now the weather forecasts that predict "High of 40 today" have started you to wonder, "Gee, I guess it's warm enough now." Never mind the fact that along with high of 40 there was a threat of winds gusting up to 40 MPH, too. I am smart enough now to understand the sights of the dreaded "Spring Rocket Fever"! Just when you think it's safe and the rocketeers have settled down to a long winters nap, POOF, the threat of an impending spring has caused them all to go hay wire! Sounds of sanding, epoxy, and paint fill the household air, you can watch the furious dashing around the house. No, not Santa in his workshop, not the basement getting remodeled, no, 'tis the season of the "I'm gonna build all new rockets for this years launches" time. Just when I thought it

was safe, the Bade household goes topsy turvy and the phone starts ringing off the wall: "Is there a launch scheduled YET?" E-mail stacking up faster than I can pick it up: "Is there a launch scheduled YET?" Sounds of the weather channel fill the air day and night. Newspapers turning to section B for the reports and the Internet being surfed day and night. No, not the stock reports: "The heck with the stock reports! Give me a good extended forecast for the weekend!" Rain Monday through Friday? No problem as long as it is clear Saturday or Sunday. No problems if we're up to our armpits in mud, it's gonna be 40 and sunny so they're going LAUNCHING! So what if the mud swallows up the van, as long as he can get the launch equipment out before the doors go under! They're going LAUNCHING! Let it snow, it's not rain, so let's go LAUNCHING! I have given up. The signs of spring, for me, are the colors of the flowers and buds on the trees and the grass growing. Point these out to a rocketeer: Look at the beautiful violet tulip. The reply you get is: Yep, I think Les has a Purple Martin rocket the same color, and look at the red, the Fat Boy John has is the same color. And look at the yellow and black, looks just like the color scheme on the Warthog. And those over there look just like the colors of the Eliminator or Excalaber, or what ever they're called now! Thank you,

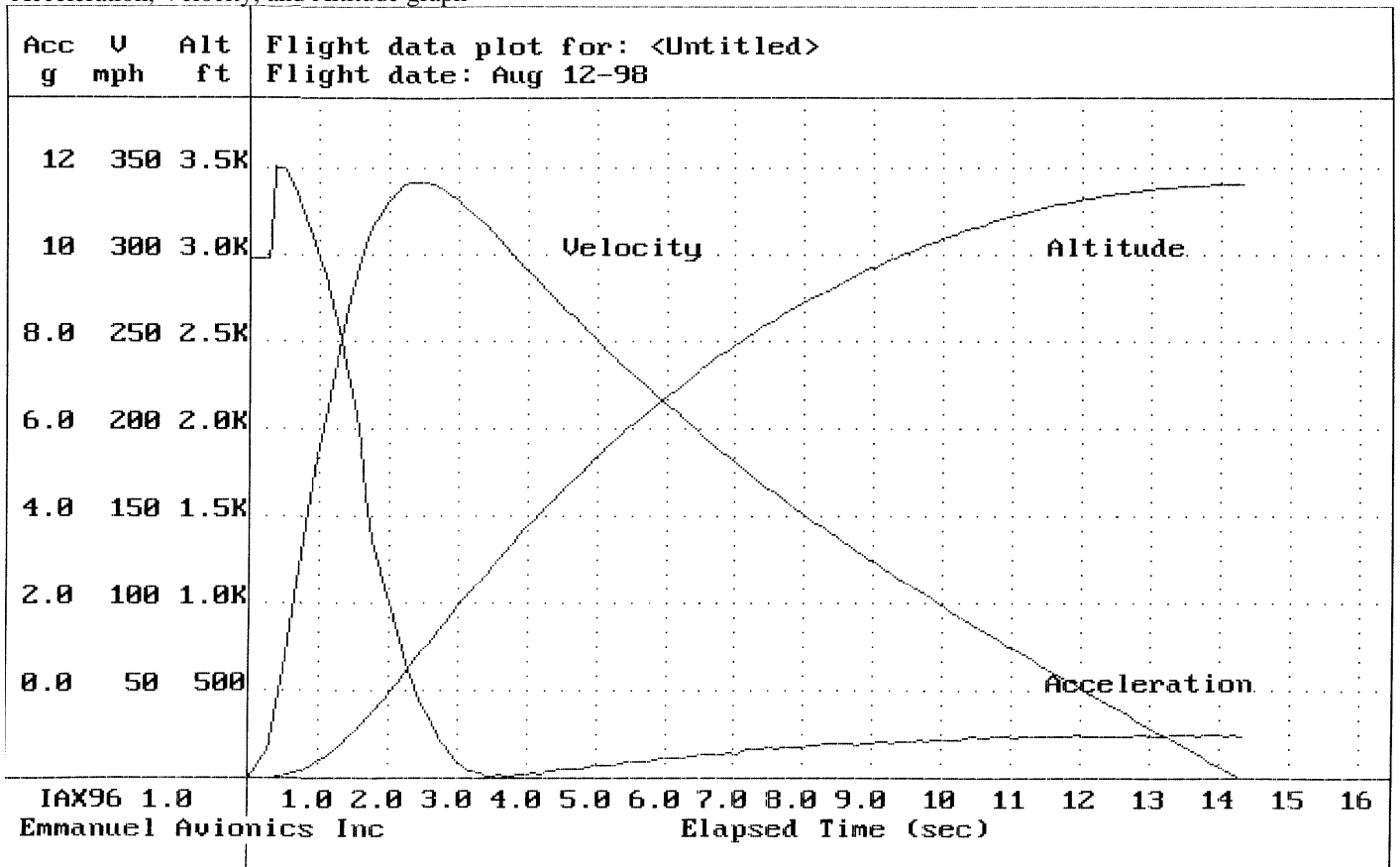
## Club Mid-Power Pad

Several years ago, the club was donated a launch pad. Unfortunately, it was a basic pad, no angle or swivel adjustments, and it was hard to assemble and disassemble. Our resident mechanical expert, Matt Hudak, recently turned this into a great mid-power pad. It can handle rods up to 1/4", has both angle and swivel adjustments, and is very solid. Matt turned a barely usable pad into a fine addition to our launch equipment. Good job Matt!

Aerotech J390HW Turbo White Lightning hybrid motor thrust curve



Acceleration, Velocity, and Altitude graph



Michael Ray (right) and son Michael show off their scratch built hybrid powered Sandhawk.



Michael Ray and son do the final preparations on the Sandhawk



The Sandhawk takes to the skies using an Aerotech Turbo White Lightning hybrid motor.



**TRI-CITY SKY BUSTERS****NAR #535****1999 LAUNCH WINDOWS**

**All Launches will be subject to the NAR MODEL AND HIGH POWER ROCKETRY SAFETY CODES (i.e. U.S. Model & High Power Rocketry Sporting Codes.)**

Standard Launch Dates will be the SECOND SUNDAY, and FOURTH SATURDAY of each month. With weather re-schedule dates of the THIRD SUNDAY and FIFTH -or- FIRST SATURDAY of each month as needed.

The location of a launch varies from one launch to the next. This is especially inconsistent from about November to April each year. We also have impromptu launches throughout the year. These may be to test new launch locations or for special events. To find out where the next launch is located, check the Sky Busters web page (address at bottom of page), contact a Sky Buster member, or call one of the phone numbers at the bottom of the page.

<u>SUNDAY LAUNCHES</u>		<u>SATURDAY LAUNCHES</u>
January	10, 1999	January 23, 1999
February	7, 1999	February 27, 1999
March	14, 1999	March 27, 1999
April	11, 1999	April 24, 1999
May	2, 1999 (Adjusted)*	May 22, 1999
June	13, 1999	June 26, 1999
July	11, 1999 (Adjusted)**	July 24, 1999
August	8, 1999	August 28, 1999
September	12, 1999	September 25, 1999
October	10, 1999	October 23, 1999
November	14, 1999	November 27, 1999
December	12, 1999	December 18, 1999

\* February 14th Launch adjusted to February 7th due to Valentines Day

\*\* May 9th Launch adjusted to May 2nd due to Mother's Day.

\*\*\* December 25th Launch adjusted to December 18th due to Christmas.

**If a launch is canceled or postponed for any reason, we attempt to notify everyone by email or telephone. If you plan on attending a launch, please call one of the club officers a few days before the launch. Remember, this is only a tentative schedule; launch dates are variable due to weather, field availability, and other conditions.**

An "All-Day Range Fee" of \$1.00 per Person launching will be charged, with a max. "Family-Fee" of \$2.00. This fee is in place to insure that all range equipment and supplies are maintained with the NAR Safety Code in mind. All Persons launching should fill-out & hand-in a flight log sheet before departing the field. These sheets are provided at the time you pay your launch fee. The flight log sheets need your Name, NAR or Tripoli number and launch date, as well as your flight information. Please fill in flight information such as rocket name, motor used, and any comments about the flight. We use these logs to write up launch reports. If you haven't joined the NAR or Tripoli, please do so, as it is necessary if you want voting privileges within our section.

The Tri-City Sky Busters web page is at <http://www.geocities.com/CapeCanaveral/Lab/5528/nar535.html>

Contact: Neal Bade (216) 265-3093, Mark Sadowski (330) 666-5235, Gerry Freed (216) 476-2496, or Jim Phillips (330) 898-5851

**Newsletter Information**

The Tri City Sky Busters Newsletter is published bi-monthly for the members of Tri City Sky Busters, NAR Section # 535. The newsletter was edited and produced by Neal Bade. If you would like to submit an article or photos, or have a suggestion for future issues please send it to me via one of the following methods:

1. Email to Neal\_Bade@compuserve.com, or if using Compuserve at 71431,141. Please send either ASCII text or Microsoft Word format.

2. Mail to Neal Bade, 14055 Kathleen Dr., Brook Park, OH, 44142. I can be reached at 216-265-3093 in the evenings.

**We need your input!**

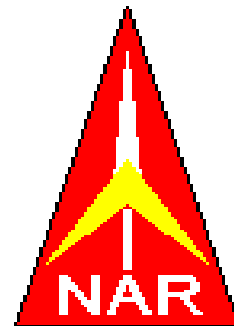
This newsletter is written *by* Sky Busters members *for* Sky Busters members. We need your contribution to make this newsletter worthwhile to other members. Articles can be written about anything rocketry related.

If you have built a kit recently, we would like to hear about it in a kit review. Maybe you've come up with some technique that would be useful to your fellow rocketeers, we would like you to share it with us. Like many of us, maybe you are a BAR (Born Again Rocketeer) who has rediscovered the hobby after many years. We would like to hear about your experiences.

See "Newsletter Information" (at left) to submit your article for publication.

**Club Membership Dues**

Please remember that your \$5 yearly club dues need to be paid for 1999. You can make payments to any of the club officers. Make checks payable to "Tri-City Sky Busters". Reminder: If you have NAR insurance, it also needs to be paid for 1999. You can reach the NAR headquarters at 1-800-262-4872.



**Tri City Sky Busters**

c/o Neal Bade  
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Brook Park, OH 44142



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- *Hybrid thrust curve and flight data graphs*
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- *New club "Mid Power" launch pad*