



Northern California  
Aerobatic Club

CHAPTER 38

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# THE ACRONAUT

Volume 9 - Number 6



**Rory Moore's Pitts S-2C, aka the "Pepsi Pitts" (Paso 2007)**

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## Prez' Post

Darren Pleasance

It's Paso Time!!!

I hope most of you are finding a way to make it down to Paso Robles this weekend to partake in our annual mega-event. As usual, Tom Myers has done a fantastic job of getting us all set to go, with new box markers thrown in as icing on the cake. With the help of many others, including notably Cory Lovell and Howard Kirker who bent over backwards to make sure we had sponsors and t-shirts to complement all of Tom's planning and preparing, we should be set for a terrific event.

Unfortunately, for the first time in many years, I won't be able to even make an appearance at our event. I had a work commitment come up that I couldn't get out of (conference in Hawaii so don't feel too sorry for me) so I'll just have to get the blow-by-blow after the event and at our Post-Paso-Party (PPP) next month.

Speaking of which, make sure to mark your calendar for mid-afternoon, on Sunday, July 13th for our PPP event at the Livermore Airport. We'll have a BBQ and other fun festivities for the whole family so make sure you block the time now.

BTW, for those of you who missed it, our Chapter meeting last month was a big hit with the surprise visit from Sergei Boriak, a world-class coach and multi-time winner of the World Aerobatic Championships. We had the opportunity to hear from Dave Watson, Howard Kirker, Cory Lovell, and Melissa Andrzejewski about the insights they got from their 3-day training camp and we got to hear directly from Sergei about his approach to coaching as well as the story of how he got started in aviation as a teenager in the Soviet Union. It was a great story of perseverance and a constant weeding out process that left him as one of the top pilots in the USSR, and eventually THE top pilot in the world. Many thanks to Cory for organizing this.

In addition, there are several other interesting "happenings" since last month's newsletter:

a) Our Calaveras County Waiver has been renewed. Look to our website for a copy of it, and the reach out to me, Howard, Todd, Cory, Peter, or Andrew for a briefing on the specifics of using the box. As always, Kathy Z., the airport manager, is excited to have us there so do stop by to use the box periodically and say "hi" to her for us.

b) Andrew and Yuichi are back in the air again with a newly rebuilt Lycoming AEIO540. Word on the street is that despite having lower compression, and less horsepower than the original "pumped up" engine, the airplane is now even faster than before given the keen eye placed on rigging the plane correctly this time. Congrats guys!

c) I finally closed on my new house in Oregon and will likely be spending a year up there beginning late summer. The house is truly incredible, with a built-in hanger and a view of the airport, golf course, and river. With my job, I'll still be in the Bay Area every week and plan to still be at our Chapter meetings every month. If any of you are looking for an excuse for a fun trip to Sunriver, Oregon for a weekend of river rafting, canoeing, mountain biking, fishing, or in the winter for great skiing at Mt. Bachelor, please come and visit us. We're at the end of Runway 18 at the Sunriver airport (S21).

Well, that's about it for now. Good luck to all of our Chapter 38 competitors this weekend in Paso. Bring home the Chapter trophy again!

Blue  
skies,

Darren



*Sergei Boriak talks at Attitude Aviation*

## Hammerhead

*Contributing Editor: Dick Lewis*

*Editors Note: This is a reprint of an article that appeared in the November 1988 issue of SportsAerobatics. This is one of the most comprehensive and complete descriptions I've read, so I thought others might find it useful as well...*

**EDITOR'S NOTE:** This is the third in a series of ten educational articles penned for this magazine by the late Dick Lewis prior to his tragic fatal accident.

The Hammerhead is the largest K figure in the Sportsman sequence and is make or break in competition. It is typical of the sense of humor of IAC Known sequence drafters that the Hammerhead is traditionally placed first, or very early, in the Sportsman sequence. It deserves extra attention.

Judging criteria for the Hammerhead focus on the quarter loops in and out (they should have the same radius), the vertical up and down lines and, particularly, the turnaround. A vertical aircraft attitude, not necessarily vertical flight, is wanted. The judges want to see a flat, cartwheel, turn -in the plane of the wings --without any roll ("torque"). The turn should be timed so that the highest point is reached just as the nose falls through " in an arc rather than a cartwheel. The judging criterion is that the up and down lines (of the fuselage) should be parallel within one-half the wing span. (See Chapter 7 of the current IAC OFFICIAL CONTEST RULES book.) A late turn results in an ugly and undesirable tailslide (whip-stall) type figure. Some aircraft, such as the Decathlon, are placarded against tailslides because of the potential for structural damage. The entry and exit altitudes of the Hammerhead do not need to be the same.

One good way to develop a rough standard procedure for the Hammerhead is to select a standard entry speed, standard G pulls in and out, and a standard time count up to the turn.

Climb to, say, 3500' AGL (for practice) and clear the airspace (especially above). Enter in horizontal flight at standard speed at full competition power. Power remains constant throughout. Brisk, strong pullup (say 5G). Eyes left (or right) through your lateral sight gauge to the horizon. Crisp stop at vertical attitude using the lateral sight gauge. Monitor the upline with the lateral sight gauge. Make sure the wings stay level during the pullup, and as the vertical line is set, by using appropriate rudder (judge by lateral sight gauge against horizon). Some left or right rudder, depending on the airplane and the characteristics of the pullup, will be needed to neutralize the net effect of the various yawing forces. You want to set and hold the upline without major adjustments (called "hunting") which the judges consider undesirable. Fly up to the turn making small aileron, elevator, and rudder adjustments to hold the vertical line without rolling. Count up to the turn ("hup-one, hup-two, - hup-turn"). Left turns go much better because of the airflow pattern from the prop down over the

tail (some aircraft won't hammer to the right at all) so let's say you go left full rudder here (inserted briskly).

As the rotation starts, there is a tendency for the aircraft to roll toward the inserted rudder (outside wing lifts), left in this case, which must be opposed with full, or almost full, opposite flights aileron to keep the turn flat. Elevator must also be played to keep the turn flat; usually some forward stick is necessary. Don't apply back stick; that will only worsen the roll tendency. As the left cartwheel progresses you want to watch to see that the left wing moves straight down against the background of the earth and that the nose falls through the same point on the left horizon from which the wing just dropped away. Adjust aileron and elevator to achieve this. As soon as the nose falls through the horizon, look down and pick a point directly below the airplane. Stop the turn with opposite rudder with the nose on this point. Allow no oscillations here. Check for vertical attitude and wings level using the lateral sight gauge. Wait a couple of counts and pull out with, say, a 4G pull.

You can do quite well in competition by always doing Hammerheads the easy way; i.e., to the left. And until you are very good at them, you are probably better off just practicing one direction. It is a fact, however, that (everything else being equal) Hammerheads into the wind will score better. If the wind is from the right, hammer right and vice versa. The reason for this is that, if you hammer into the wind, wind drift will tighten the cartwheel turn and bring the up and down lines closer together - it looks better to the judges. A hammer into the wind will mask any tendency to fly over the top; a hammer off the wind will exaggerate this error. So as you get better it is a good idea to learn to hammer well in both directions.

There are several alternative ways to judge when to initiate the turn. If you always enter the Hammerhead at about the same airspeed then the technique described above a time count - is simple and reliable. In aircraft with high power-to-weight ratios, there is time at the top to watch for a piece of yarn attached to the wing to go limp or to watch for a given angle of right aileron deflection to develop. Significant and increasing right aileron deflection is necessary on the upline in high power-to-weight ratio aircraft to oppose the rolling force generated by the propeller - more aileron is needed as the aircraft slows down. Some wing-mounted sight gauge installations include a small arrow that is mounted on a pivot with adjustable spring-loading such that it will move (or flip) out of alignment with the airflow when a selected low airspeed is reached -- when it flips you push rudder. Many Pilots rely on a seat-of-the-pants sense of the approach to zero G or on the changing engine sound as the propeller pitch changes.

(Continued on page 4)

(Continued from page 3) - Hammerhead

Critiquing from the ground to refine the procedure is essential; each element of the judging criteria should be considered. Remember that critiquing is premature until you can fly the figure reproducibly. For the Hammerhead this will require many, many repetitions. One particular point of the critiquing in this case is to help you select the time count up from where the vertical attitude is first obtained to the point where rudder insertion is made.

Why are opposite aileron and forward stick necessary at the top of a Hammerhead to get a flat, cartwheel turn? The answer is in the nuances of the aerodynamics during the turn. It's an interesting subject. First of all it should be said that, if the Hammerhead were done absolutely by the book, these control inputs would not be necessary, or at least greatly reduced, in most airplanes. The rule book says that the vertical lines of the Hammerhead should be flown on the "zero-lift axis" of the aircraft: i.e., with the wings at zero angle of attack. If this were done, the cartwheel would go around flat except for the rolling torque generated by the reaction to the engine turning the propeller. This is a factor for very light, very high-power aircraft. For lower-performance aircraft the aerodynamic problem comes from the fact that to score well on the vertical lines you must fly the lines with the fuselage vertical. Because the wing is attached to the fuselage at a significant angle of incidence (2 or 3 degrees is typical), a vertical fuselage means that the wings are generating lift on the vertical lines. Yawing the aircraft with rudder in the Hammerhead turn therefore generates a roll due to the fact that the outside wing is moving faster and generating more lift. This roll tendency can be opposed with aileron and/or the roll tendency can be reduced by moving the stick forward to achieve near zero angle of attack. Moving the stick back increases the angle of attack and exacerbates the problem.

If altitude loss in the Hammerhead is a problem, somewhat less is expended if power is reduced to idle just after the downline is established and, of course, the length (time) of the downline is minimized. Don't cut the throttle sooner because you lose necessary rudder and elevator control. Leave the throttle closed until well into the pullup. The flip side of this is that your airspeed will be less coming out of the figure and this may be a problem going into the next one.

(The information contained in the articles of this series is, necessarily, based only on my own experience and that of a few pilots in IAC Chapter One who have critiqued the articles before publication.)

## Exploder News - May 2008

*Peter Jensen*

The Acro Exploder, maintained by Guenther Eichhorn, is an e-mail list for exchange of acro related information. A lot of useful information is exchanged. The entries can be read via this web-site:

[http://acro.aerobaticsweb.org/iac\\_email\\_archive.html](http://acro.aerobaticsweb.org/iac_email_archive.html)

If you wish to post, you'll need to sign up. Everybody have read access via the above link though.

Here's some of the more interesting topics from May 2008:

- AEIO-540 automobile unleaded fuel?
- Apple Valley 2007 Photos
- AWAC Donation Drive
- Contest/Practice Waiver
- Crank retirement - Cost check
- Decathlon project for sale
- FAA Info For Getting Your Contest Box Approved
- Fuel Tank Replacement
- 20 yrs limit
- Contest/Practice Waiver
- Insurance for "Two Design"
- G meter mechanical vs. electronic
- Going Green
- IAC contest safety record
- Kate DeBaun here... NEW WEBSITE
- Parachutes for sale
- Parachutes for sale- 20 year lifetime
- Part Time Aerobatic Flight Instructor Needed
- PDK Temp Hanger Space
- Pendleton
- Portable GPS
- S-1S flop tube question
- Sergei Boriak camp in NC
- Smoke systems vs power
- SU-26M FOR SALE
- Technoavia SP-91 for sale
- Test-fly / Rental Cap232 (possibly also for EAC)
- The truth about HP
- Wanted: Spinner

# Contest Results

Peter Jensen

## Los Angeles Gold Cup May 2-3, 2005

Apple Valley Airport, CA  
Contest Director: Patrick Dugan

### Primary

Rank/Pilot	Ch	Known	Free	Unknown	Total	% PP.
1 Andrew Slatkin	49	516.70	529.00	522.20	1,567.90	82.96%
2 Scott Malherbe	49	516.90	529.90	509.80	1,556.60	82.36%
3 Kathleen Howell		504.50	514.20	509.30	1,528.00	80.85%

### Sportsman

Rank/Pilot	Ch	Known	Free	Unknown	Total	% PP.
1 Stephen De La Cruz	49	1,224.40	1,162.20	1,204.70	3,591.30	86.75%
2 Steve Packer	38	1,193.20	1,157.80	1,200.20	3,551.20	85.78%
3 Casey Erickson	36	1,175.50	1,147.60	1,175.70	3,498.80	84.51%
4 Mike Eggen	38	1,176.80	1,173.60	1,129.30	3,479.70	84.05%
5 John Howell	26	1,153.00	1,140.20	1,108.10	3,401.30	82.16%
6 Layne Lissner	38	1,104.90	1,110.40	1,177.90	3,393.20	81.96%
7 Barrett Hines	49	1,116.90	1,154.40	1,101.80	3,373.10	81.48%
8 Conrad Nordquist	36	1,122.30	1,158.10	1,071.40	3,351.80	80.96%
9 Chris Olmsted	38	1,106.50	1,129.30	1,064.90	3,300.70	79.73%
10 Joshua Muncie	36	1,027.90	1,116.90	1,126.70	3,271.50	79.02%
11 Madoka Takano		978.70	1,068.30	1,045.70	3,092.70	74.70%
12 Dan Franscioni	26	702.90	1,155.80	1,135.20	2,993.90	72.32%
13 Margo Chase	49	1,127.80	1,104.20	649.40	2,881.40	69.60%
14 Matthew Brill	118	878.20	875.50	914.20	2,667.90	64.44%
15 Timothy Brill	118	1,093.30	1,063.80	0.00	2,157.10	52.10%
16 Perry Barlow	49	611.50	1,015.50	0.00	1,627.00	39.30%

### Intermediate

Rank/Pilot	Ch	Known	Free	Unknown	Total	% PP.
1 Steve Madorsky	36	1,627.10	1,689.10	1,391.30	4,707.50	82.44%
2 Michael Hartenstein	36	1,658.00	1,642.30	1,385.60	4,685.90	82.06%
3 Thomas Franscioni	38	1,580.40	1,679.40	1,421.70	4,681.50	81.99%
4 Jason Wondolleck	49	1,665.40	1,709.80	1,244.20	4,619.40	80.90%
5 Michael Montgomery	36	1,693.10	1,499.70	1,405.00	4,597.80	80.52%
6 Bruce McGinnis		1,619.60	1,635.10	1,197.80	4,452.50	77.98%
7 Norman Manary	36	1,560.90	1,662.30	1,186.30	4,409.50	77.22%
8 Cory Lovell	38	1,353.20	1,654.60	1,277.70	4,285.50	75.05%
9 Judy Phelps	49	1,480.10	310.20	1,260.80	3,051.10	53.43%
10 Peter Poland	49	191.20	1,637.90	157.70	1,986.80	34.80%

### Advanced

Rank/Pilot	Ch	Known	Free	Unknown	TBLP Tot.	% PP.
1 Malcolm Pond	36	2,064.10	2,636.30	2,366.00	7,066.40	82.55%
2 Reinaldo Beyer	36	2,100.60	2,667.10	2,116.40	6,884.10	80.42%
3 Martin Kennedy	46	1,952.20	2,415.80	2,162.50	6,530.50	76.29%
4 Randy Owens	36	1,926.10	2,383.90	2,130.80	6,440.80	75.24%
5 Hans Bok	35	1,905.80	2,374.10	2,010.20	6,290.10	73.48%
6 Dave Watson	35	1,860.20	2,518.30	1,757.30	6,135.80	71.68%
7 Howard Kirker	38	1,678.40	2,146.50	1,011.90	4,836.80	56.50%

### Unlimited

Rank/Pilot	Ch	Known	Free	Unknown	TBLP Tot.	% PP.
1 Norman DeWitt	38	3,051.40	3,568.20	3,372.80	9,992.40	82.17%
2 Vicki Cruse	49	2,938.80	3,650.80	3,302.20	9,891.80	81.35%
3 Todd Whitmer	38	2,840.90	3,485.60	2,873.40	9,199.90	75.66%
4 Doug Jardine	36	2,967.30	2,734.70	2,672.00	8,374.00	68.87%

# Apple Valley Contest Pictures

Kate DeBaun

The pictures below is a small selection of some of Kate's amazing contest pictures from the Apple Valley contest. For more pictures check out her web-site:

[www.kwdphotography.com](http://www.kwdphotography.com)



Dan Franscioni



Kate DeBaun



Cory Lovell

## IAC Chapter 38 Membership Application/Renewal Form

Name: \_\_\_\_\_

Spouse: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip: \_\_\_\_\_

Home Phone: \_\_\_\_\_

Work Phone: \_\_\_\_\_

E-mail 1: \_\_\_\_\_

E-mail 2: \_\_\_\_\_

IAC #: \_\_\_\_\_

EAA #: \_\_\_\_\_

Certificate #: \_\_\_\_\_

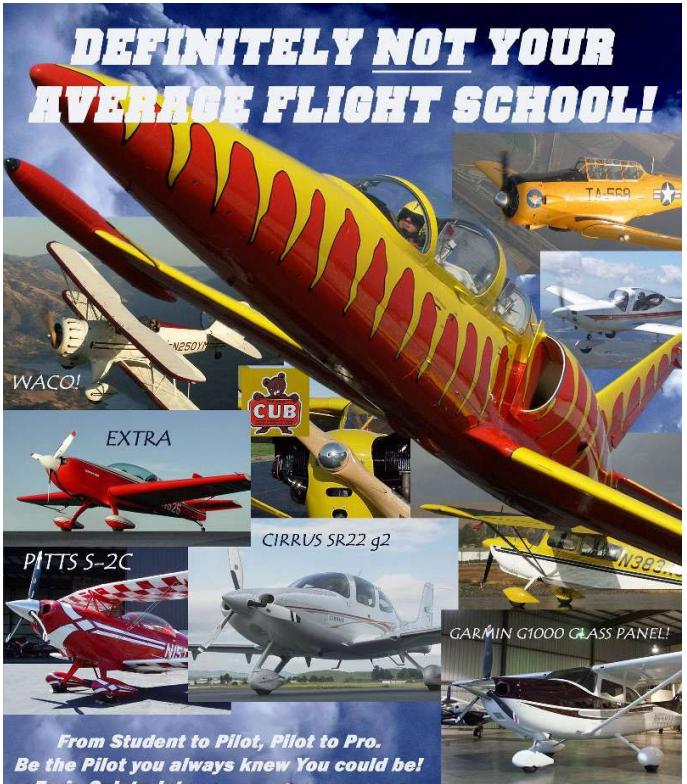
EAA Expiration Date: \_\_\_\_\_

Judge:  Regional  NationalCompetition:  None  Basic  Sportsman  Intermediate  Advanced  Unlimited

Aircraft: \_\_\_\_\_

N #: \_\_\_\_\_

Referred By: \_\_\_\_\_

Dues:  Single Membership (\$25/year)  Family Membership (\$30/year)Send with check, made payable to "International Aerobatic Club Chapter 38", to:  
**Howard Kirker, IAC38 Treasurer - 2279 Ocaso Camino - Fremont, CA 94539**Peter Jensen  
Editor, IAC 38

**Chapter Meeting:**  
No meeting in June  
See You at Paso!



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