



NEWS RELEASE

NMPPRA

NATIONAL MINATURE PYLON RACING ASSOCIATION INC

→ FORMULA I → QUARTER MIDGET →

APRIL 1978

AMA AFFILIATED

SINCE 1965

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P. O. Box 543
Chatsworth, Ca. 91311

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13915 Califa
Van Nuys, Ca. 91401

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Westlake Village, Ca. 91361

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-- PRESIDENT'S PAGE --

Well the 1978 racing season is underway, and it looks like Super Tigre again will have a lot of competition from the K and Bs.

I would like to congratulate Bob Brodgon for his flight of 1:12 flat. This of course is the New World record and it is the first time the record has gone to anyone out side of California.

Elections result for the new Vice Presidents are S.C.E. Dave Harter. N.C.E. Bill Hager, N.E. Brian Sattler and Darrol Cady for N.C.W. My congratulations to all the new Vice Presidents. I would like all of them to contact me, so I can get them instructions on keeping National and District points.

Ed Rankin has volunteered to run the Nationals in Lake Charles, and will need lots of help, anyone interested in helping please contact, or write:

Ed Rankin
6072 Wonder Drive
Ft. Worth, Texas 76133

Sincerely,

Bob Smith

SECRETARY'S CORNER

It's Spring and the beginning of racing season for you Northerners and Easterners. In the warmer parts of the country we have already had our first races and we've seen a new fast time record. (Reported elsewhere in this newsletter.)

If one of your racing friends comments that he has'nt yet sent his 1978 dues, you might remind him that as of April 1st, dues are \$12.00. By the way, we have temporarily run out of NMPRA decal sheets. We are having new sheets made up, but it will take a few weeks. So if your membership card comes in the mail without a decal sheet, it will be on the way to you as soon as I receive them. There are also a few NMPRA Jacket Patches available at one dollar each.

In the past there has been a bit of confusion about obtaining information about points from out of district races. To do so you must give your district Vice President the following information in writing.

1. location of race
2. number of contestants
3. your placement in the race
4. name, address, and signature of C.D.

The last subject I would like to touch on is racing numbers. Specifically single digit numbers. Those of you who have these numbers have them because you are either an old member, have worked for the NMPRA as a District or National officer, been an outstanding contributor to the sport of pylon racing, or have got it through luck or "grease". This year, and I hope in the future, single digit numbers will go only to those racers who make an outstanding contribution to the sport of Pylon racing. To have a low number is a nice "stroke". but we feel it is something that should be earned.

Good Racing

Gary McPike, National Secretary

OHIO PYLON RACING ASSOCIATION SCHEDULE FOR 1978

May 20-21	O. P. R. A. Dayton	1/4 Midget, Form I
June 3-4	Ann Arbor	1/4 Midget,
June 10-11	O. P. R. A. Dayton	1/4 Midget, Form I
June 17-18	River Dist. Eagles	1/4 Midget, Form I
June 24-25	R. C. C. D.	1/4 Midget, Form I
July 8-9	O. P. R. A. Ft. Wayne	1/4 Midget, Form I
July 17-23	Canadian	
Aug. 20	Hoboy Stop	1/4 Midget
Aug. 26-27	O. P. R. A. Dayton	1/4 Midget, Form I
Sept. 23-24	O. P. R. A. Dayton	1/4 Midget, Form I

FROM SOUTHERN CALIFORNIA

March 11 and 12th, Sepulveda Basin, Van Nuys, California, a total of 33 entries attended the kickoff contest for Formula I. We had twenty-one experts and twelve standard flyers. The weather undoubtedly had a great deal to do with the low attendance as a few well known names were missing. The weather provided somewhat cooler than normal temperatures with a few light showers and sprinkles throughout the two days of racing. There was a direct crosswind that prevailed for most of the contest.

The Contests Directors of the race was Ralph Rosen of the Valley Flyers and Dick Ferrier of the B.I.R.D.S. CLUB. Betty Stream, Area V.P., AMA, assisted in the pit and scheduling activities. The sponsoring clubs did an excellent job under extreme circumstances.

When the dust had cleared on Saturday, four rounds were completed with Ed Allen leading the event. He was closely followed by Mike Atzei, Gary Hover, Len Ledson and Tom Christopher only two points behind.

Sunday Ed Allen continued his string of wins until round eight when a bad needle cost him one point. He still managed to win the contest by one point over Tom Christopher, who flamed out in the first round, but then managed a perfect score for the remainder of the event. Mike Atzei found Sunday not to his liking, dropping two points in round 5, one in round 6, cut out in seventh, and Mid-aired with Bob Smith in eighth! Gary Hover had second place all tied up with Christopher until eighth when he went for time and cut out dropping him to fourth place in the event. When Ledson had a DNF in the fifth round and dropped one point in sixth to Garner fifth place. Bob Wilde found sixth and seventh round unfavorable and had a DNF and two cuts that dropped him to eighth place. Dave Shadel with his good strong showing captured third. Sixth place and the only other person to break 1:20 was up and coming Jim Stafford. In round eight Jim turned a 1:19.8 with his Brown Bag Minnow and Super Tigre x-40. Watch out for this contender. Two DNS in round one and two stopped Stafford's bid for the top five.

In standard class the NMPRA National Secretary, Gary McPike led all contenders for the class win. Gary flew a beautiful Brown Bay Minnow with a Super Tigre power that was really humming. Gary is a relative newcomer to Formula I, but he is rising fast and really enjoys the sport tremendously. Chuck Bentz captured second place with Russ Kime and Joe Stream tied for third. Fifth place was Ristrim from San Jose Area. This was young Ristim's first Formula I race and with helpers like Sheldon and Rouse, we look for much more from this competitor. Another new name was Bob Janiger who flew a very old, but still beautiful Shark. Bob needed a larger fuel tank in the early rounds. He finally found the combination in the later rounds and made a very creditable first showing. Tony Amezcua had probably one of the fastest planes of the entire contest but cuts and DNS'S took him out of contention.

The later rounds took quite a toll of aircraft in the way of Mid-Airs, pilot error and a few hot landings. The race was a safe one, with good flying just above the pylons and careful passing for the most part. This is very important if our sport is to remain regulated by NMPRA. Unless we implement and enforce stringent safety measures, we may end up with very few sponsors, resulting in Pylon races being conducted entirely by the competitors.

STANDARD CLASS

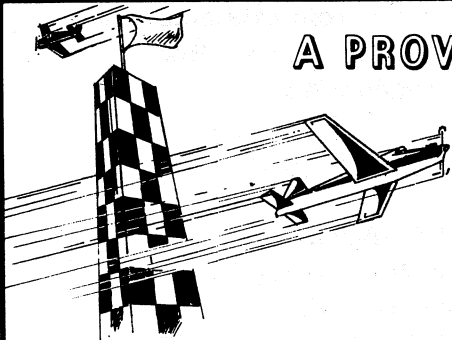
	Fast time	Average time	Plane	Engine
1. Gary McPike	1:43.5	1:57.6	BB	X40
2. Charles Bentz	1:39	1:44.3	Toni	X40
3. Russ Kime	1:25.4	1:36.4	Toni	K&B
4. Joe Stream	1:42.2	1:49.5	Toni	K&B
5. Ristrim	1:43.5	1:50.9	Toni	X40
6. Don Kaylor	1:28.1	1:29.9	Toni	X40
7. Dick Jones	1:49.4	1:58.6	---	---
8. Tony Amezcua	1:37	1:37	Toni	K&B
9. Gene Sidwell	NT	NT	Lria	X40
10. Bob Janiger	1:55	1:55	Shark	X40

EXPERT CLASS

	Fast time	Average time	Plane	Engine
1. Ed Allen	1:20.5	1:24.55	Lria	X40
2. Tom Christopher	1:20	1:24.08	BB	X40
3. Dave Shadel	1:17.4	1:24.11	Toni	X40
4. Gary Hover	1:24.5	1:28.20	Toni	X40
5. Len Ledson	1:22.5	1:29.20	Toni	X40
6. Jim Stafford	1:19.8	1:29.45	BB	X40
7. Ed Hotelling	1:21.2	1:26.48	Toni	X40
8. Bob Wilde	1:32.6	1:35.52	Lria	K&B
9. Mike Atzei	1:26.6	1:30.28	Toni	X40
10. Rusty Van Baren	1:22	1:26.87	Toni	X40

Sincerely,

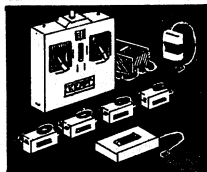
Tom Christopher

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A FLORIDA (NEWS) FLASH

On the very same "Magic Typewriter" that produces journalistic gibberish for money, come this exciting freebie race report, written in great haste at the personal request of our hard working Editor, "Gawn Fishin" Bertken. We dedicate this report to NMPRA'S good friend, 1-WS, who unfortunately fell asleep while reading last month's newsletter, and is now cursing out Jeff because he was in the john at the time.

The Southeast's (SEMPRA) first race of 1978 was held at Titusville, Florida, a few miles from Cape Canaveral. On March 19th, twenty F-I guys and a bunch of go-fast air moved onto Ti-Co Airport and turned out six rounds of extremely rapid pylon racing. So rapid, in fact, that the course was re-measured just to make sure all the pylons were where they were supposed to be. Consistent with the rest of the fantastic hosting job by the Moonport Modelers, the course was on-the-money.

Good weather and three previous months of nothing to do but make props and work on engines resulted in a scoreboard filled with teen times. Everyone was going fast, and as a matter of fact, way back in 1975 Charlie Brunner told everyone in the Southeast that he had turned a 1:17 at some mysterious race in St. Louis. We've all been waiting year after year to see him do it again, and lo and behold, at Titusville Charlie finally delivered after three years of trying. Charlie's next 1:17 is due in the Spring of 1981, so be sure not to miss it.

Much of the heat racing was very close in addition to being fast. Traffic was tight most of the time and surprisingly there was only one mid-air with both planes landing safely. One unfortunate casualty occurred when Brian Richmond and Johnny McDermott came into the #2/3 pylon turn together. Brian elected to go below John, and we all know that that's a no-no. John flies very low and there isn't much below his plane except ground. We all fell bad about Brian's crash, but it sure was exciting to see him try to fly 48 inches of wing through a 47 inch space.

First Place was decided in a fly-off between Will Preis and John McDermott. Bill did not have the dilemma of having to choose between flying under or over John as Bill used "Plan C" which is the best of all just stay AHEAD of John. Trophies were awarded through fifth place, and a nice feature about winning one in Titusville is that the club will engrave your name on the trophy and mail it to you.

Someone who didn't win a trophy but will get his name engraved somewhere is Bob Brogdon, who established a new world's record in Formula I with a 1:12 flat. Bob's speedy K&B powered Pole Cat backed up the record flight with two other low teen times along with an 11-lapper clocked at 1:15. It would be a fairly safe prediction to say that the 1:10 barrier is going to fall this racing season, and there are some K&B's around that are capable of doing it now.

Two zeros kept speedy Brogdon out of the hardware, one earned in the very last round when he regrettably stuffed his record-setting Pole Cat on the way back from #1 over controlling it. The plane was unfortunately a basket case, but the engine looked unharmed, but more importantly is reproduceable. In Atlanta they are singing a song that goes....

"In the jungle, the resless jungle, no tiger sleeps tonight." I don't know exactly what it means, but it's a catchy tune.

Top Ten finishers:

1. Bill Preis	Toni/TT	1:13 (9 lapper?)
2. John McDermott	Toni/TT	1:17
3. Dennis O'Brien	Pole Cat/X40	1:17
4. Gale Jacobson	Pole Cat/K&B	1:18
5. Jim Moorehead	Toni/TT	1:40 (for real!)
6. Jim Maki	Minnow/K&B	1:15
7. Tom Pownall	Toni/TT	1:18
8. Carl Simms	Toni/TT	1:26
9. Brian Richmond	Toni/TT	1:16
10. Dave Donat	Pole Cat/TT	1:29

BOB REUTHER



HOBBY WORLD

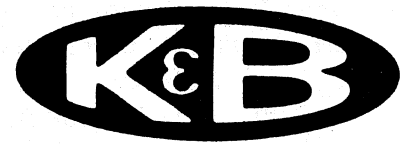
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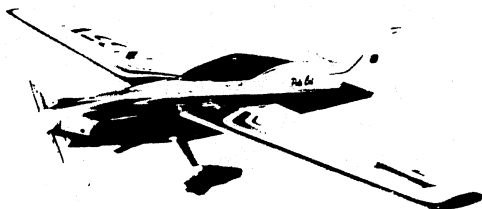
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QM SECTION

At this writing, we have no results to report in the election of president of NMPRA-QM. In fact we just received our copy of the March News Release.

With only one person running for QM President, it is unlikely that a write in candidate would be elected. Your QM President for 1978 therefore will probably be:

Gail E. Jacobson
Lt. Col. USAF Retired
2205 Britley Terrace
College Park, Ga. 30349

Lets make a race of it in 1979. If you are interested in running for QM President or Area Vice President send your name and address to George Zink by August 31, 1978. It would be nice to include a little modeling biography and anything else pertinent to the election.

For 1978 the Area Vice Presidents are:

West Coast

Bob Gillespie
12271 Episilon
Garden Grove, Ca.
92640

Arizona
California
Nevada
Washington

South Central West

Dr. Charles Monnet
1606 Elmhurst
Oklahoma City, Okla.
73120

Utah Texas Oklahoma
Oregon N. Mexico Arkansas
Idaho Louisiana

South Central East

Greg Doe
110 Belleview Rd. Apt. 15
Nashville, Tenn.
37221

Alabama Mississippi
Florida N. Carolina
Georgia S. Carolina
Tennessee

North Central West

Jack Aycock
1422 Tesla Drive
Colo. Springs, Colo.
80909

Colorado Montana
Kansas N. Dakota
Nebraska S. Dakota
Wyoming

North Central East

Art Arro
117 Grandview
Ann Arbor, Mich.
48103

Ohio Michigan
Iowa Minnesota
Indiana Missouri
Illinois Kentucky

North East

Len Wiederhoeft
817 Fairfield St.
Mechanicsburg, Pa.
17055

Delaware Virginia
Maryland Pennsylvania
New Jersey W. Virginia
New York and all the
New England States.

FIRST RACE OF 1978 for NCPL

Saturday and Sunday, May 6 & 7.
Saturday: Quickie 500 and 1/2 A
Sunday: Quarter Midget

Contest Director: Bob Nelson of BOB'S R/C SUPPI
432 Ardmore
Waterloo, Iowa 50701
Phone: (319) 233 4771

RACING SEMINAR

M. A. R. A.

C. P. P. R. A.

All racers and Potential racers welcome

Saturday and Sunday, April 15th & 16th Rain or Shine
Lehighton, Pa.

Events: Informal races - Form I, QM, Q-500 and Sport
 Speed Trials.
 Dynamometer Testing of engines.
 Presentations and demonstrations: props, engines, etc.

For further information write: George Zink
 80-28 222 St.
 Jamaica, N. Y. 11427
 (212) HO 4 3160

We would like to run contest schedules for your district. It has been noted that some C.D.'s are running contests which are not AMA contests and therefore not listed in the contest Calender of MODEL AVIATION. For all your contests, please inform both your AVP and George Zink.

Everyone should be aware of the functions of the contest board and their procedures. If you wonder where that blankety blank rule came from, then read the April issue of MODEL AVIATION, pages 74 - 77. You will find that it came from you. Between now and September 1978, rule changes are being accepted for the 1980 rule book. The current rules therefore are in effect till then.

As a starter for the 1980 rule book (and as a new feature for this newsletter, a discussion of changes and/or recommendations made by you will be included depending of course on your support.) We would like to obtain your thoughts on the changing of the slotted pipe to an unslotted pipe of the same size.

Please, when offering a change, give us the reason(s) for it and also realize that we may print your change exactly as you wrote it. Our objective is to take an active role in any rule changes to be made for 1980. We would like to call your attention to page 76 in that April M A issue to the paragraph on the ADVISORY COMMITTEES TO THE CONTEST BOARDS. We want to exercise the option for QM rule changes, if this is what you want.

G. Jacobson

If there are QM racers in the new North West NMPRA District, and they would like to establish their own district in QM, please get together and let us know.
Ed.

Q. M. SECTION

1977 Season Point Winners

It may be news to some of our QM racers, but NMPRA Trophy Shirts are given out to the Seasons Point Winners.

In 1977, NMPRA policy was the same as 1976 when the Trophy Shirts went to the high point man in each district.

For 1977 Trophy Shirts will go to:

- | | |
|-----------------------|--------------------|
| 1. Bob Rot | West Coast |
| 2. Paul Zink | North East |
| 3. Gail Jacobson | South Central East |
| 4. Dr. Charles Monnet | South Central West |
| 5. Jack Aycock | North Central West |

The North Central East, which is a relatively active area, had no results to report simply because none of the contestants bothered to send in the contest results to the AVP. This year we have changed the reporting method and hopefully we will get all the results, publish them in the News Release, and keep the membership up to date on point totals.

1977 SEASON POINT RESULTS

North East District (top 25)

- | | |
|---------------------|-----------|
| 1. Paul Zink | 579.0(6) |
| 2. Richard Berner | 519.7(6) |
| 3. Al Grove | 483.2 (6) |
| 4. Dave Latsha | 475.6 (6) |
| 5. Bob Blouch | 448.9 (5) |
| 6. Bill Hager | 438.5 (6) |
| 7. Lew Hipkins | 413.8 (6) |
| 8. Gary Villard | 404.8 (6) |
| 9. Len Wiederhoeft | 361.9 (6) |
| 10. Frank Heil | 348.6 (6) |
| 11. Steve Nielsen | 343.5 (6) |
| 12. Dick Beltz | 336.4 (6) |
| 13. Bill Mousley | 324.7 (6) |
| 14. Warren Batson | 286.9 (6) |
| 15. Rube Tyson | 278.5 (6) |
| 16. Ron Bressler | 262.9 (4) |
| 17. Ben Martin | 262.2 (5) |
| 18. Gary Milliken | 219.9 (4) |
| 19. Dave Hidden | 214.0 (4) |
| 20. Jim Sweeney | 212.7 (6) |
| 21. Arthur Talisman | 165.4 (6) |
| 22. Fred Fogelman | 158.1 (3) |
| 23. Tom Mousley | 136.7 (6) |
| 24. John Majikas | 130.0 (3) |
| 25. Bob Buzash | 118.5 (2) |

South Central East District

- | | |
|------------------|-----------|
| 1. Gail Jacobson | 432.9 (5) |
| 2. Bob Reuther | 387.5 (4) |
| 3. Tom Moore | 269.7 (4) |
| 4. Greg Doe | 238.4 (3) |
| 5. Bill Adams | 203.4 (3) |
| 6. Bob Jesse | 145.3 (2) |

West Coast District

- | | |
|--------------------|-----------|
| 1. Bob Root | 610.9 (?) |
| 2. Nick Nichols | 534.1 " |
| 3. Bob Adams | 508.2 " |
| 4. Bob Nickle | 441.9 " |
| 5. Mel Santmeyer | 405.0 " |
| 6. Bob Novak | 386.6 " |
| 7. Dave Robertson | 370.8 " |
| 8. Bill Racer | 222.6 " |
| 9. Bob Gillespie | 173.7 " |
| 10. Tom Christofer | 138.9 " |
| 11. Terry Prather | 105.4 " |
| 12. Bill Bell | 87.6 " |
| 13. Jack Stafford | 37.8 " |
| 14. Fred Reese | 3.4 " |

South Central West District

- | | |
|-------------------|-----------|
| 1. Charles Monnet | 198.7 (3) |
| 2. L. Baggot | 96.0 (2) |
| 3. Keith McClure | 80.3 (1) |
| 4. T. White | 73.6 (1) |
| 5. P. Jones | 57.7 (1) |
| 6. B Brunken | 35.1 (1) |
| 7. P. Clays | 30.2 (1) |
| 8. C. Greenwood | 27.0 (1) |
| 9. T Rollins | 20.6 (1) |

North Central West District

- | | |
|----------------|-----------|
| 1. Jack Aycock | 269.1 (3) |
| 2. Tuxworth | 77.2 (2) |
| 3. Heitkamp | 48.5 (2) |
| 4. Jack Dech | 30.0 (1) |

1978 QM POINT SYSTEM

1. Only NMPRA Members are eligible.
2. It is the responsibility of each member to register with us and ensure the CD sends us the contest results. Club and circuit newsletters are acceptable.
3. The point count awards points on the basis of finishing position and the number of entrants in the race.

The formula is:

$$\text{Points} = \left(\frac{100}{E} + .2 \right) (E - P) + 1.2$$

Where E = Number of Entries

P = Finishing position of contestant

4. Season Point Total will be the 5 highest contest scores for each individual.
5. Where 2 classes of QM are available, the number of contestants in both classes shall be the number of entries. Finishing position is established by scoring all the experts ahead of all the standards.
6. All contestants regardless of NMPRA affiliation, will be counted in the number of entries.
7. Points will be accepted when 4 or more rounds are flown.
8. Cut off date for results received is November 1, 1978.
9. Awards will be presented to the highest scoring NMPRA members in each district. When reporting the contest results to NMPRA, please include the following information.

1. Name of the Contest.
2. Host club or organization.
3. Date of the contest.
4. State.
5. * AMA Sanction No.
6. Contest Directors name and address.
7. Number of contestants.
8. Number of rounds flown.
9. Contest Information.

- | | |
|--------------------------|----------------|
| a. Contestant Name | d.* Aircraft |
| b.* Contestant NMPRA No. | e.* Engine |
| c. Finishing position | f.* Best time. |

* Optional, but we would like to publish this info in the News Release.

Send Results to:

George Zink
80-28 222 St.
Jamaica, N. Y.
11427

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AERODYNAMIC DRAG

Chapter 3

Reynolds Numbers

Reynolds Numbers, or symbolically, Rn, derive from the work of Osborn Reynolds (1842 - 1912). He studied fluid flow in pipes and after quite a bit of work developed scientific laws to predict the flow in full size pipes by studying models. As you may imagine, there were quite a few conditions which would vary from case to case, the pipe diameter, pipe length, how fast the fluid flowed, it's density and viscosity. Reynolds' law brought all these into a manageable form and applied to gasses as well.

The law is called the "Similarity Law" and it states, "The flow pattern and force coefficients (lift & drag) of two similar bodies (same shape, may differ in size) is the same for identical Reynolds Numbers." Conversely, if the Rn should be different, the flow pattern changes and so do the forces.

Reynolds Numbers are the ratio of dynamic forces to frictional forces which act on the body or the fluid.

Dynamic Forces

V = velocity (ft./sec.)

p = fluid density (slugs/cubic ft.)

l = Body dimension, usually length (ft.)

Friction Forces

u = Fluid Viscosity (lb. sec.)

square ft.

$$\text{The equation is: } Rn = \frac{p v l}{u}$$

For our purposes, we can consider both p & u to remain constant for air at 68⁰F and sea level conditions.

p = .00223 Slugs/ cubic ft.

u = .000000375 lb. sec./square ft.

If we convert V & L in terms of ft./sec. and ft. respectively, we can say that:

$$Rn = 6220 V L$$

For example:

Find the RN of a QM wing tip. Speed is 90 mph. and chord length is 5.5"

First convert to the proper terms.

90 mph = 132 ft./sec.

5.5 in. = .459 ft.

$$Rn = 6220 \times 132 \times .459 = 376,000 \text{ or } 3.76 \times 10^5$$

Rn for some other parts of the same aircraft at 90 mph. are:

Wing chord (7 in.) at root

$$Rn = 4.78 \times 10^5$$

3/4" dia. tail wheel

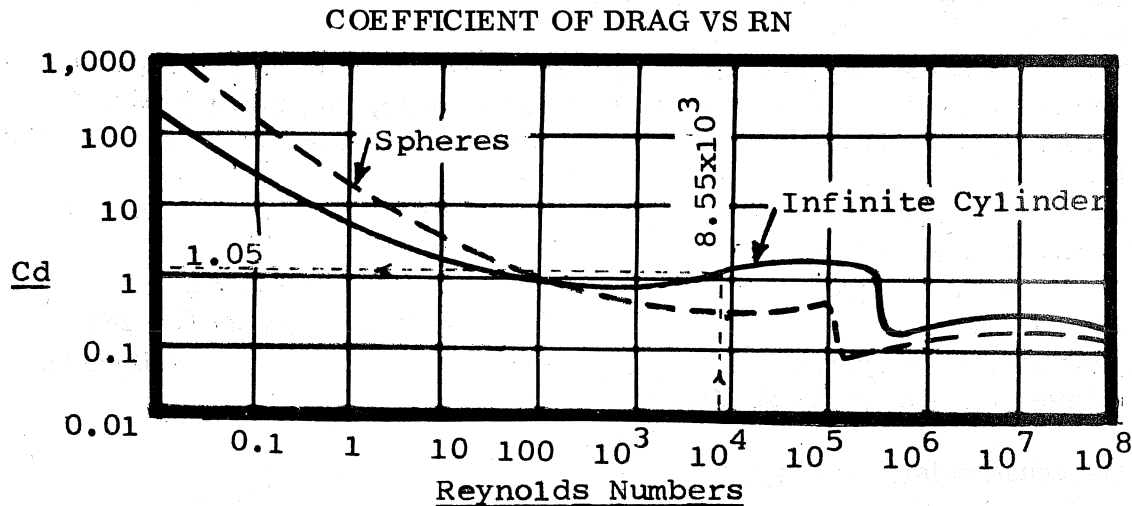
$$Rn = 5.12 \times 10^4$$

1/8" dia. landing gear strut

$$Rn = 8.55 \times 10^3$$

Now that the R_n has been found, we can find flow patterns, lift and drag forces from work others have already done. Of course, you must make sure that the shape you are using is similar to the one from which you got data.

The chart below is an example of available data. The chart is good for spheres and "infinite cylinders". Infinite cylinders are used because cylinders come in all lengths and there are some drag losses at the end. The shorter the cylinder, the larger is the portion of drag which comes from the ends. The infinite cylinder has no ends, so you must add in the end losses later. Generally, the greater the length with respect to the diameter, the closer the drag will be to the infinite cylinder line.



A coefficient is simply a number put before a mathematical expression for multiplication. If all other factors in a drag situation are equal, the lower drag coefficient will have the lower drag.

Let's turn to the practical side and see what we can do with our newly gained knowledge. For instance, is it worthwhile adding fairings to the landing gear struts of a QM?

Let's assume that the QM flies around 90mph. It has 2 landing gear struts made from 1/8" dia. wire, each 3" long. Neglect end effects.

Step 1. Calculate the R_n of the wire.

$$R_n = 6220 \times 90 \text{ mph.} \left(\frac{44 \text{ ft./sec.}}{30 \text{ mph.}} \right) \times .125 \text{ in.} \left(\frac{1 \text{ ft.}}{12 \text{ in.}} \right)$$

$$R_n = 8,555 \times 10^3$$

Step 2. Find the drag coefficient.

Look at the chart above and locate $R_n = 8.55 \times 10^3$

Start at the bottom line and at $R_n = 8,55 \times 10^3$ run a line straight up until it hits the infinite cylinder curve. From where it crosses this curve, run a horizontal line to the left, back to the Cd. Reading the Cd. I get 1.05.

Getting a month ahead of ourselves, the formula for drag is:

$$\text{DRAG} = \frac{1}{2} \rho v^2 A C_d$$

We have enough information to determine the drag, the only new factor is A and in this case simply is the side area of the struts.

$$A = .125'' \times 3'' \times 2 = .75 \text{ in.}^2$$

$$\text{Strut Drag} = 1/2 \times .00223 \text{ Slugs/ft.}^3 \times (132 \text{ ft./sec.})^2 \times .75 \text{ in.}^2 \left(\frac{1 \text{ ft.}^2}{144 \text{ in.}^2} \right) \times 1.05$$

$$= .111 \text{ lb.}$$

Now let's look at the fairing.

We chose a fairing 4 times as long as it is thick, a typical fairing section. It is about the same as a 25% symmetrical airfoil.

Step 1. Calculate Rn for the fairing.

$$Rn = 6220 \times 90 \text{ mph.} \left(\frac{44 \text{ ft./sec.}}{30 \text{ mph.}} \right) \times .5 \text{ in.} \left(\frac{1 \text{ ft.}}{12 \text{ in.}} \right)$$

$$Rn = 3.42 \times 10^4 \quad (4 \text{ times that of the wire})$$

Step 2. Find the Cd of a 25% symmetrical airfoil at

$$Rn = 3.42 \times 10^4. \quad \text{This takes data research. I came up with a Cd} = 0.09$$

Step 3. Determine the drag of the fairing.

$$\text{Fairing drag} = 1/2 \times .00223 \text{ Slugs/ft.}^3 \times (132 \text{ ft./sec.})^2 \times .5'' \times 3'' \times 2 \left(\frac{1 \text{ ft.}^2}{144 \text{ in.}^2} \right) \times 0.09$$

$$= .038 \text{ lb.}$$

Comparing the wire and the strut fairing, you can see that the wire has about three times the drag that the fairing does. It pays to use the fairings.

When comparing things on the same aircraft, you assume that both p and V are the same in both cases. You can strike them from the formula and deal with just A and CD. It doesn't give you the drag, but you can compare.

Remember, the flow patterns and the lift and drag forces change when the Rn changes. To use any of the accumulated data on airfoils, drag or lift, first get the Reynolds Number and then find the data that best fits it. The chart shows that drag can change by a factor of more than 1,000 and it all depends on the Rn.

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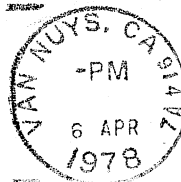
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