RADIO CONTROL

Soaring

Dan Pruss

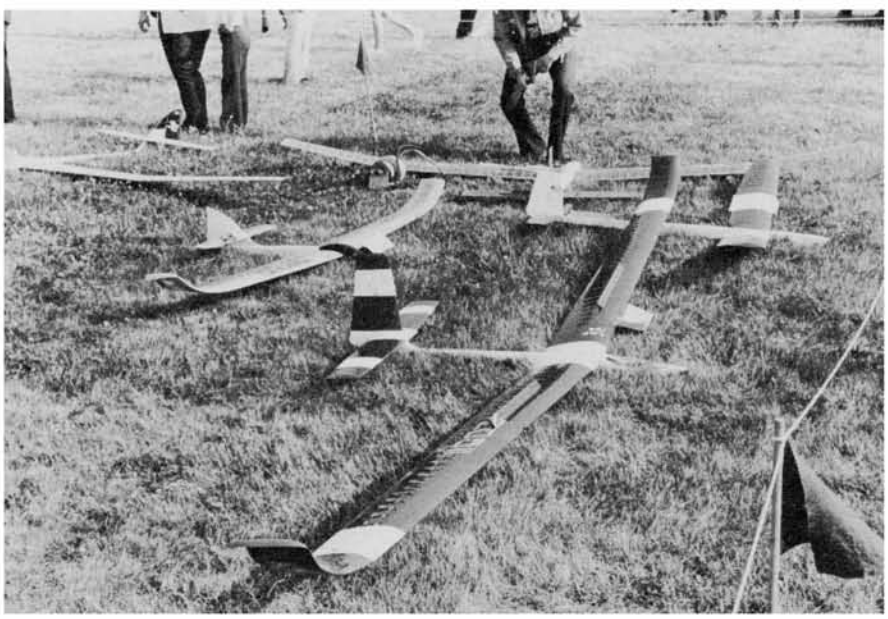
IT'S BEEN SAID before but it's worth repeating and being reminded. If there is one thing our sport has going for it, it is the flexibility of model design and competition events. To further bear the latter out, Neal Nolte sent an idea that Bob Clarke and he, along with the Cordova Model Masters, used for two contests this past year.

The task was simply a seven-minute precision duration with spot landing for a bonus. (For newcomers, the precision duration is based on a point per second of flight time up to seven minutes. Perfect flight score, therefore, would be 420 points.) Now the task by itself isn't unique, but each contestant's highest and lowest rounds were scratched. This not only threw out a "bad air" flight but eliminated the chance of a flier running away from the pack with perhaps the only good luck flight. As Nolte pointed out the five rounds of flying with a hi-lo throw-out attacked the same effects of the man-on-man (one-on-one) contests, namely the chance effects of air variation.

Nolte further pointed out that the contests can be run with less manpower and frequency problems than a man-on-man contest. As was pointed out in this column some months back, there are many advantages to the one-on-one concept but the Achilles' heel of the system lies in the possibility of a two-, three-, or four-way fly-off for top spot and all fliers are found to be on the same frequency.

In the two contests the Cordova Model Masters held, they claim the following: 35-40 contestants with about 200 tows for each contest. Four winches permitted the contests to be run in less than three and one-half hours! In both contests, 30% of the flights were over six and one-half minutes—and these on 600-650' tow lines. But 16% of the flights were high flights and subsequently thrown out, leaving a 14% max flight figure for each day. Interestingly, the winners of both contests each had one poor round, but by being consistent in all the other rounds were able to come out on top.

Greg Seydel looks pessimistically at an overcast sky at the SOAR Nats while Floyd Combs' original design is made ready for flight.



Curled up wing tips distinguish Jim Porter's original on flight line at SOAR Nats.

Other advantages include simplified scorekeeping since only one type of task is being flown. This in turn eliminates other scoring charts and conversion tables, and contestants and timers are not confused about what is to be flown each round. It was further pointed out that to really simplify scoring, the timers merely showed the recorded flight on the stop watch to the scorekeepers and the time was posted. If flier and timer acknowledged the time, that should prevent any scoring irregularities.

The negative side to the hi-lo throw away system must be realized in the fact that for longer contests the meet must be run in a most efficient manner. Five rounds seems to be a minimum that would be practical when one considers only three rounds would be tallied. For a 100-contestant show that means 500 flights in a day, if it is a one day contest. That number has been achieved before but the logistics for such an event become of some concern. When one considers further, that 200 or 40% of those flights will be for naught, it might take some convincing of the ole winch-master that 40% of his efforts will also go for the same value.

But why not try it on your own club level. It sure sounds like the luck factors—good and bad—have been reduced and it should tighten the spread on the scoreboard.

Nolte also sent an expression or two and an observation on the old bugaboo—spot landings. He noted that back at the 1974-1975 L.S.F. Tournaments the landing zone was on concrete. This resulted in most scale-like approaches and landings for a great majority of the flights. Those that attempted to test the durability and hardness of the runway's three to one mix, found that balsa/fiberglass/Monokote came out a very poor second.

Because most of us aren't blessed (?) with such landing zones, Nolte suggested the following, "If a pilot wants to dork (this has been accepted in the modelers' vernacular in describing a landing which more closely resembles a kamakaze attack with results to the model closely akin to the full-size counterpart) his plane, lets make it highly probable he breaks it!

"I've not had the chance to try the following landing area but hope to shortly. A pie-shaped wedge of 30 to 40 degrees arc out to our common 25-foot radius, all or part of the area laid out on plywood, edges leveled, padded, buried or whatever, so no abrupt edges are exposed to rip wings or noses. At a projected distance out from the edge radii are pylons made from two ¼-in. sq. balsa pieces taped end for end, giving 5-, 6-foot height after being pushed into the ground an inch or so. These pylons shear easily at ground level if hit and don't

Continued on page 81

Continued from page 20

disrupt the flight path even if they don't shear off."

Nolte goes on further to say, "A 10-mph wind may be too much for the balsa, but I recently took part in a contest put on by Merced R/C who used them, and I was very impressed by their effectiveness. (Threading a 12-foot wing through a 15-foot pylon gate was rather fun too.) To gain landing points, then, I'd propose a pilot must enter through the pylon gate without touching them and then land on a hard surface so that the entire fuselage comes to rest within the wedge boundaries!

"To me this cuts out the approach-from-any-angle situation we have now, the pylons demanding a restricted approach line. The hard surface will foster smoother, scale-like touchdowns rather than a crash dive. Requiring the entire fuselage to be inside the wedge will force the pilots to maximize their chances at scoring by landing farther out in the wedge and trying to slide farther into the point of the wedge."

Neil goes on. "Finally, while a dork landing now pays off as long as you don't shed parts or break something off, a dork at the point of any wedge isn't very likely to produce a score since the dork usually is a result of too much approach speed and tends to produce cartwheels or ground loops which should in most cases put some part of the fuselage outside the boundary radii."

Taking Nolte's figures of a 25-foot by 30 degrees the landing zone would be about 164 square feet which translates into over five sheets of ¼-in. plywood. Cutting these into small enough sections for ease of transporting and then assembling so the joints wouldn't disrupt a smooth landing might cause the club field director some concern. But it's worth a try.

Get the lead in! In the February issue this column described a proven method for a permanent nose ballast made of B-B shot. Since then this scribe has used the B-B shot in a rather simple yet most effective way to make ballast modules.

For improved L/D or better penetrating capabilities when wing loadings are relatively light, the adding of ballast to the center of gravity is used and the method of ballasting varies with modelers. Most common is a slug of lead cut to fit a fuselage compartment. More sophisticated methods include custom fit bars of various weights so the desired overall ballast can be made up of the smaller modules. Lead-filled brass tubes that slide into the wings—parallel and close to the main spars—work well also.

However, for a simple ballast solution, acquire some small plastic bags. Bags of 5 inches by 1½ inches work very well. For added insurance against punctures take three bags and put one inside the other. Eight ounces of shot produces a "soft" lead packet of approximately 3¼ × 1¼ inches. By rolling the top of the bag over several times and stapling the fold you have a secure packet. Of course, the packets can be made up to any weight and three or four different sizes are recommended. This allows combinations in selecting an overall ballast weight. These "soft" packs have the advantage of being able to absorb shock should a hard landing occur. Their pillow-like shape won't localize a sudden load such as bolted down lead bars do, and the overall effect is a much more gentle treatment to your sailplane's structure.

While you're making ballast you might want to have your wing-loading figures handy. Make up a chart for three columns: ballast, weight, and wing loading. Under the ballast column put the numbers in ounces of ballast you might be using for varying conditions. Under the weight column list the planes' all up weights for the respective ballast weights. Next to those figures under wing loading list the various respective figures. (Wing loading per square foot can easily be computed by dividing the overall weight by the wing area in square feet.) Tape the chart under the canopy floor or in the ballast compartment for ready reference.

As for the right combinations only you—with practice under varying wind conditions—can determine that.

Dan Pruss, Plainfield, IL

Model Aviation
April 1977

COMPETITION NEWSLETTER

ACADEMY OF MODEL AERONAUTICS 815 FIFTEENTH STREET, N.W. WASHINGTON, D.C. 20005

Report by Jim Simpson
RC Soaring

During the week of November 27 to December 5 I had the opportunity to travel to Paris and attend the FAI Plenary Meetings as a representative of U.S. RC Soaring interests. This was possible because the AMA and our special interest groups deferred most of the expense.

Preparation for the trip began about six weeks before departure with reservations, passport and especially a consolidation of our position. This last item included a thorough review of our own FAI program and many briefings by Dan Pruss, John Worth and Frank Ehling. The trip itself began with my flight from Dallas/Ft. Worth to New York City. There I met the rest of the U.S. delegation, and during the ensuing 24 hours of delays we got acquainted and began to appreciate problems of other special interest groups. We finally arrived in Paris early in the morning after being up most of two days and nights. Rest and reorganization was the order of the day.

Due to the fact that our trip was a package deal to save bucks, we had a couple of days to settle in and get ready. This included group discussion, review of the agenda and consolidating our position as a delegation representing all U.S. modeling interests at the upcoming world organization meetings. As the delegates from other nations arrived we were able to meet them and discuss mutual problems.

Generally speaking, the U.S. RC Soaring position was to "get the show on the road," so I was quite interested in everything relating to the upcoming World Championships for RC Soaring. To this end I'm happy to report that it is "all systems go!" South Africa, here we come! On a lesser note a previous ruling by a higher authority in the FAI structure makes the original unaltered rules effective for this upcoming event.

It was a real eye-opening experience to sit in session with delegations from 26 countries and deliberate on matters regarding modeling worldwide. I hope to be able to report on this in greater detail at a later date. As I see it there is a huge void regarding general knowledge of the organization and structure of FAI, especially its functions relating to modeling. I feel that we ordinary old American modelers too often feel that FAI is for "them other guys"—but really it's for all of us.

Now, as I write this report on board a TWA jet enroute home I keep remembering certain specific moments of the past week, and I want very much to "bend your ear" about them.

I have known John Worth and worked with him for a long time. It should not surprise or amaze me when I see him do so much —so well, but he does and it did. I feel we all owe him a great deal, and we ought to all pitch in and help or stay out of the way.

It was a real pleasure to get to know the representatives of other U.S. special interest groups. Dr. Laird Jackson (CL), Ron Chidgey (RC Pattern), John Burkam (RC Helicopter) and George Xenakis (FF) are all serious hard working dedicated people who did their jobs well. Together with the AMA President Johnny Clemens we comprised the U.S. delegation and were able to coordinate U.S. modeler interests very well.

It is my personal recommendation that we continue to participate in and support these meetings with representatives of the special interest groups. These people can help John get things done, and nothing is more efficient than just doing what must be done.

FAI RC Slope Soaring Rules

Provisional—Revised December 1976

3.1. Definition. The competitor controls a model in lift generated by the action of the wind blowing against rising ground.

The contest is a multi-task event for radio controlled gliders which includes three tasks: (a) distance, (b) speed, (c) aerobatics. The combination of two or more tasks is a round. The organizers will determine which tasks are flown taking into account site topography and wind velocity prevailing.

3.2. Launching. The competitor or his helper launch the model by hand from the starting area indicated by the organizer.

During the flight no more than one relaunch is permitted on account of accidental landing before the task is completed.

During the task A no relaunching is permitted.

3.3. Organization of the Contest.

a) The competition must be held at a site suitable for slope soaring. The minimum average angle of the rising ground at which international competitions may be held is 25 degrees and the height not less than 200 m.

b) When marking the starting and landing areas and the turning planes the organizer must take into account the configuration of the terrain and the wind direction. Any changes in the flight and landing areas may be made only between flight tasks, i.e., all competitors must fly the task in the same area.

c) With the agreement of the international jury the organizers must not open, or must interrupt the contest in the event that:

c.a) The velocity of the wind is less than 3 m/s (6.7 mph) or more than 20 m/s (44.7 mph), or

c.b) The direction of the wind is incessantly derating more than 45 degrees from the direction perpendicular to the slope, or

c.c) The site is unqualified for the competition or is unsafe for the competitors due to influence outside of the organization, i.e., radio interference, storm, fog, etc.

d) If it is not possible in consequence of conditions given in para. (c) to bring the contest to its scheduled end, the organizer may terminate the contest. Only rounds and tasks completed by all competitors may be taken into account to determine the final classification. In such a case the organizer is not obliged to return the entry fees nor repeat the contest.

e) The organizer must provide the following officials:

e.a) One flagman at each turning line for each model flying simultaneously and who will signal the crossing of the turning plane by the model.

e.b) One additional flagman at each turning line who will signal the crossing of every model.

e.c) Two timekeepers/lap counters for each model flying simultaneously.

e.d) Three landing area/aerobatics judges for each model flying simultaneously (no more than two aerobatic flights may be made simultaneously).

3.4. Task A—Distance.

a) The competitor controls the model in such a way that it flies along the slope and passes two mutually parallel planes perpendicular to the slope, the distance between which is not less than 150 m (492'1.5"). Only the number of passings completed within 6 minutes from the order to launch are scored together with landing on a rectangular area 50 x 100 m, the longer side of the rectangle being parallel to the slope, marked by flags located at the corners.

b) For each passing between the two planes, irrespective of the direction of flight,

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the competitor is awarded 25 points.

c) Fifty additional points will be awarded if the model lands in the marked landing area. No points will be awarded for the quality of landing. The model does not have to touch down in the landing area to obtain the landing bonus, but must come to rest with its nose within the landing area.

d) Only the passings between the two planes completed within 6 minutes of the signal to launch are scored.

e) One point will be deducted for each second flown in excess of 360 seconds (6 minutes).

f) No landing bonus will be awarded if the flight time exceeds 420 seconds (7 minutes).

g) A classification based on decreasing scores will be compiled with points given as described in 3.7. to establish partial score A.

3.5. Task B—Speed.

a) In this task from a flying start the model flies 5 laps (10 passes) between two mutually parallel planes perpendicular to the slope, the distance between which is 150 m (492'1.5"). Six gliders make a simultaneous flying start.

b) At the end of the preparation time the starter gives the order to launch after which one minute (60 seconds) is allowed for competitors to gain height.

c) A ten-second countdown is given to the start signal after which the gliders may cross the start line in the direction of the first turning plane. The position of the start line and direction of the first turning line will be determined by the organizer.

d) When the glider reaches each turning line a flagman is used to signal that the model has crossed the turning line. If a glider fails to cross the line the flagman will signal immediately the infringement to the pilot so that he can repeat the crossing.

e) The glider may only make turns away from the direction of the slope.

f) The model may be relaunched if it lands before the task is completed.

g) A classification based on increasing times to complete the course will be compiled, with points given as described in 3.7. to establish score B.

3.6. Task C—Aerobatics.

a) In this task the model is required to perform a schedule of maneuvers in the order given and within 4 minutes (240 seconds) of the order to start being given.

b) At the end of the preparation time the starter gives the order to launch after which one minute (60 seconds) is allowed for competitors to gain height.

c) After one minute the order to start is given after which the model will perform the following maneuvers. The competitor shall indicate in writing before commencing the flight any maneuvers which he will not perform.

2 Consecutive loops	K=1
2 Stall turns (left and right)	K=1
1 Axial roll	K=2
1 Four-point roll	K=3
5 seconds of Inverted flight ½ roll start and finish	K=2
2 Consecutive outside loops	K=2
1 Cuban eight	K=2
1 Rectangular approach and landing	K=1

d) Judges will award marks between 0 and 10 for each maneuver. These marks are multiplied by a coefficient which may vary with the difficulty of each maneuver. The flight score is the aggregate of points awarded by three judges.

e) A classification based on decreasing scores will be compiled with points given as described in 3.7. to establish partial score C.

3.7. Partial Scores.

a) For each task the winner receives a score of 1000 points.

b) Partial score for each competitor is determined as follows:

Partial Score A=1000 Pl/Pw

Where Pl . . . . points of competitor obtained as in 3.4.
Pw . . points obtained by task winner.

Partial Score B=1000 Tw/Ti

Where Ti . . . . time of competitor as for 3.5.
Tw . . . time of the task winner.

Partial Score C=1000 Mi/Mw

Where Mi. . . . marks obtained by competitor as in 3.6.
Mw . . marks obtained by task winner.

3.9. Total Score. For each round the total score is compiled by adding the partial scores A, B, or C for the tasks flown in that round.

3.10. Classification.

a) If only two rounds are flown, the aggregate score achieved by each competitor will determine his position in the final classication.

b) If more than two rounds are flown the lowest total score of each competitor will be discarded and the aggregate of the others will determine his position in the final classification.

c) In order to decide the winner when there is a tie, the task C (aerobatics) is repeated.