1991 FAI F3C WORLD CHAMPIONSHIPS

PART OF AEROLYMPICS III

.

OCTOBER 20-27, 1991

SUMMARY

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Chairman F3C Jury

The 1991 FAI F3C World Championship (WC) was organized as a part of the AEROLYMPICS III in conjunction with the F3A Aerobatics and F3D Pylon racing events.

I arrived in Melbourne on October 15 and spent the first day recovering from the long journey. As Event Director for the F3C category at the 1989 WC (AEROLYMPICS II) I also met with Barry Hendy, the 1991 F3C Event Director, to discuss some last minute details. Upon arrival in Wangaratta the next day, I was surprised to find that the F3C participants were scattered in 10 different motels. The motels that I visited were first rate. However, the resulting scattering of people generated a feeling of detachment in some of the participants. I found it difficult to greet many of my old friends but knew that most everyone would be at one of the practice sites so I made sure I got out there.

On Friday I had the first opportunity to observe the flying activity at a practice site just north of town. After watching several practice flights it was clear that the flying skills had again improved significantly since the last WC.

On Saturday I met with Barry Hendy to discuss the final details and also visited the most popular practice site again. Later, we visited the official F3C contest site which was located on the secondary grass runway of DRAGE AIRWORLD airport 7~km south of the town of Wangaratta. The grass strip was oriented 90 degrees to the main runway. The contest organizers had done a terrific job of preparing the field and the field condition was excellent. A large tent containing tables for the contestants' models was located at the edge of the field with the crowd control line immediately behind it. A second, smaller tent was situated next to this large tent and was utilized for the transmitter impound, frequency monitoring equipment and computer scoring.

On Sunday I received a copy of the official contest program which indicated that the F3C event was organized and would be run, for the most part, by members of the Melbourne Radio Control Helicopter Club. Model processing was to take place today and the official practice day was scheduled for Tuesday with competition rounds 1 through 4 to take place on Wednesday through Saturday respectively. A total of 37~contestants from 16~countries were registered.

Members of the FAI F3C Jury: Tony Aarts of the Netherlands, Leo O'Reilly of Australia and yours truly observed the contestant registration and model processing in the main hangar located on the airport. Each model was checked to assure compliance with FAI~regulations. Some of the contestants did not have the FAI model specification certificate nor the appropriate model sticker. These items were provided by the organizers for an appropriate fee. There still seems to be some confusion about the purpose of the FAI certificate and I will initiate a work item in the F3C Subcommittee to generate a set of instructions to help the organizers of the next WC.

A Team Managers meeting took place Sunday evening for all three categories combined.. In my opinion, this joint meeting with its associated large number of diverse teams results in an unmanageable group. Some F3C Team Managers told me after the meeting that they did not ask questions because they were in the back of the room and could not hear what was said or did not have enough time for translation. They suggested that a separate Team Managers meeting for F3C be held in future events of this size.

The Event Director had scheduled the judges briefing to occur on Monday after lunch at one of the local vineyards. A wine tasting was to follow (only after a successful briefing, Ha!). A number of issues concerning the rules surfaced and were clarified to the satisfaction of the FAI Jury Chairman, FAI Judges and Event Director. The briefing session included a demonstration flight by a local pilot who was able to fly the FAI schedule. This flight was scored by the five official FAI Judges. A scoring critique was held immediately afterwards and indicated that the Judges were ready. Unfortunately, the briefing activity took longer than expected and the wine tasting (which included the Judges and Jury members from the F3A and F3D categories) was almost over when we finally got there. However, the wines that we did taste were excellent.

On Tuesday, the official practice day, we saw all of the contestants fly for the first time and this session proved again that we must include this day in such an important event. After a rough start, the whole field operation started to flow smoothly by the end of the day. By this time the individual volunteers that had accepted a role of responsibility knew what had to be done and did it.

The first practice flight started a short time after the scheduled starting time of 09:00am. The last practice flight ended at approximately 17:30 hours. With sunrise occurring at 05:30 hours and sunset at 18:30 hours we faced a potential problem with the setting sun at the west end of the runway interfering with the judging. Thus, I requested that the official competition rounds be started one hour earlier and the organizers agreed. Because a detailed running account of each round has probably been given in each country's national magazine by this time I will not duplicate that effort here.

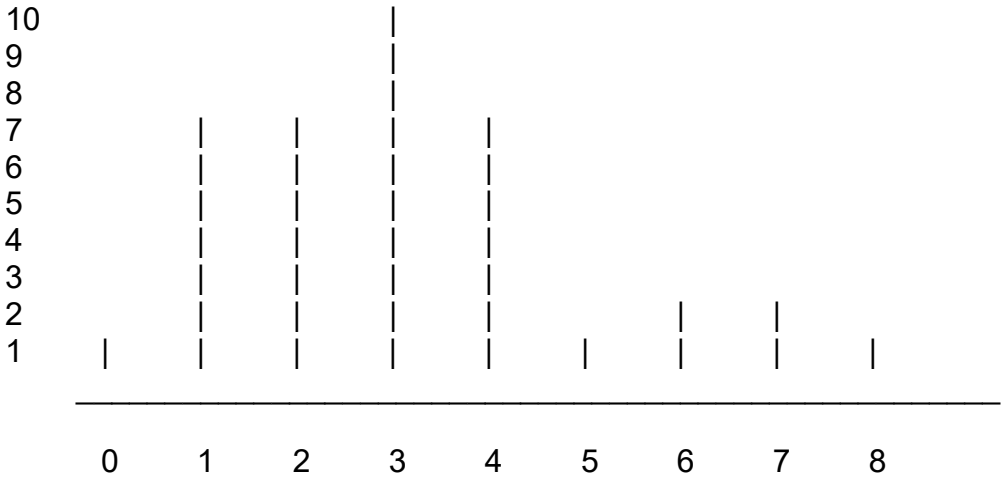
A seminar for the F3C category was held the evening of the first competition day. Mr. Makoto Kuni from the Hirobo Co. of Japan presented a talk covering the control system setup used by some of the Japanese team members. Many of us were surprised to find out that mechanical mixing within the helicopter itself is not dead, despite the overwhelming capabilities of the radio control equipment. Mr. Kuni was a very colorful speaker and drew cheers from the crowd at the end of his presentation.

Yours truly made a presentation covering the latest activity in the FAI/CIAM F3C Subcommittee, 1993 F3C Rules Changes, F3C Judging Criteria, F3C Sound Level Limit and the future of the F3C category. I received some very useful suggestions immediately after the seminar. I also got a two page letter handed to me the next day with some suggestions for improving the judging. The seminar was very well attended (approximately 100 participants) and I hope we continue with this idea at the next WC in Austria in 1993.

The weather for the duration of the competition was excellent, however, due to the flight line's orientation a significant, variable cross wind (measured at 5 to 20 mph) was experienced during the 3rd and 4th rounds. For those of you that are anxiously awaiting the score normalization in 1993 I would like to point out that the normalization process alone will not solve variations in the Judge's scores due to weather changes during a round. However, the new elimination rounds combined with a flyoff for the best 10 pilots is expected to help. Based on the measured average flight time it is not difficult to complete 5 flights per hour. Thus, we can finish a flyoff round in 2 hours or less. Past experience has shown that the weather changes very little in two hours but can change significantly in 8 hours.

The flight line coordinators were enlisted to make sound level measurements on each of the models for each of three rounds. For the fourth round, measurements were made from a distance of 4 meters instead of the proposed three meters to increase the margin of safety and also to determine the change in measured sound level. The difference in the sound level was found to be smaller than the measurement accuracy. In the past we have used a remote microphone mounted on a tripod to make safe measurements but such equipment was unavailable at this WC. Hopefully, this data and previous measurements will permit us to arrive at a maximum sound level limit for the F3C category. One problem we face is the measurement accuracy. Since the sound level is measured while the helicopter is in a hover significant variation exists just do to the small lateral and rotational movements. All measurements were made over a grass surface so the proposed applicable sound level limit is 94dBa. Since we have three separate measures on each of 38 helicopters we should be able to derive the measurement tolerance that must be allowed for. Two helicopters were noticeably louder than the rest and it was interesting to find out how much louder they measured on the meter. It turns out that they were 2 and 4dB louder than the next loudest machines. The sound levels ranged from 85 to

96dBa (excluding the two loudest) and it appears that the 94dBa limit that we have tentatively chosen may cause us some problems. If we applied the 94dBa limit to the 1991 WC and averaged the three readings then 12 helicopters would have exceeded the limit. If we took the lowest reading then only three helicopters would have failed the test. What is most disturbing is that the three sound level measurements made on each helicopter varied by as much as 8dB. Some of this difference is probably due to the operator. If we plot the number of models on the ordinate versus the max to min dB level range on the abscissa, the following graph results.



Maximum - minimum reading for the same model in dB

As shown, for 31 of the 38 models the readings varied between 1 and 4dB. Only one model's measurements resulted in 0dB variation for the three readings. If we do not change the method then we can expect an accuracy of 2 to 3dB at best. In my opinion, we must improve the measurement accuracy before we can pass judgement on the sound level produced by a particular model. Perhaps we can come up with a test where the helicopter is held captive on a freely rotating test stand, where the model's orientation in azimuth is controlled by the pilot. The engine's speed is raised to 10,000 RPM with collective pitch left at the discretion of the pilot. The microphone would be mounted on a fixed tripod at exactly 3 meters from the vertical axis of the test stand and the model would be rotated slowly through 360 degrees until the maximum sound level was observed. I am not in favor of holding a model captive and running its engine at full throttle with essentially no load. Perhaps the aforementioned scheme can be made to achieve the desired result. If there are any sound measurement experts out there I would love to get your input on this problem.

And now back to the WC. The last round is almost always the most exciting but this time it was especially dramatic. The 1987 World Champ - Curtis Youngblood and the 1989 World Champ - Yukihiro Dobashi were tied for third place at the end of the last round. According to the rules this tie had to be broken with a fly

off which Curtis won and this delayed the end of the competition to 5:00pm. There were no official protests registered during the competition. The final individual standings were 1st-Kazuyuki Sensui (JAPAN), 2nd-Wayne Mann (USA) and 3rd-Curtis Youngblood (USA). The final Team standings were 1st-USA, 2nd-JAPAN and 3rd-SWITZERLAND.

The on-site award ceremonies for F3A, F3C and F3D were advertised to take place between 5:00 and 6:00pm Sunday October 27 starting with Bulletin 2 mailed during April and also in the official contest program. For unexplained reasons this was changed for the F3C event at 3:30pm Saturday to follow immediately after round four. The actual on-site award ceremonies took place at approximately 5:45pm Saturday 26th October with officials from the Model Aeronautic Association of Australia presenting the FAI medals to the individual winners and winning teams. I found this last minute date change totally unacceptable because many supporters, spectators and some contestants missed the ceremony entirely. In addition, the winning teams had little or no time to prepare. Only the F3A category had its award ceremony on the advertised date. This gave the distinct impression that the F3A WC had special status relative to the F3C and F3D categories. The only organizational flaw in this terrific WC.

The closing Banquet, with about 500 people in attendance, took place at 8:00pm on Sunday 27th October. Trophies were awarded to the individual winners and silver plates were awarded to the winning teams in all three FAI competition categories. It was a very nice affair with good food.. However, some of us were embarrassed when someone in the crowd started throwing paper airplanes made from the place mats at the sponsors of the competition. This activity took place during the official show of appreciation. This distraction got completely out of hand when literally dozens of these airplanes found their way to the stage. In my opinion, this sort of behavior results from having too large a crowd consisting of multiple disciplines which really do not have as much in common as some might think (or perhaps wish).

AEROLYMPICS III marks the second time that the F3A, F3C and F3D competition categories were run simultaneously at one site and it reinforces the viewpoint of many members of the F3C fraternity that the much-sought-after advantages of running such a large competition have not been realized. Based on our experience in Australia (and USA in 1989) quite the contrary can be said. For example, if the 1991 F3C WC were held by itself: 1) The flying site would have been oriented parallel to the dominant wind direction, 2) The banquet with less than 200 people would have provided the F3C fellowship that was present in the past and 3) The people associated with the F3C event would have stayed at one (or at most 2) hotel(s) which also would have fostered fellowship. As Chairman of the FAI F3C Subcommittee I will strongly recommended that, in the future, the F3C WC be run totally separate or at least at a separate site.

The flying standard observed during the entire contest was extremely high. However, it is somewhat disconcerting that many machines are flying at very high speeds in order to achieve high vertical portions in some of the aerobatic maneuvers. I got the impression that the pilots were convinced that they must climb to great heights during the "540 STALL TURN" and "ROLLING STALL TURN" maneuvers in order to get high scores. The Judges did not give scores that were proportional to the height of the vertical climb. The emphasis was placed on precision, consistency and placement inside the judging window of 90 degrees horizontal and 60 degrees vertical. Of course the helicopter must have a certain minimum speed and momentum in order to climb at least one fuselage length after the 180 degree roll in the "ROLLING STALL TURN" maneuver. Perhaps the pendulum has swung a little too far in the direction of airplane (fixed-wing) type maneuvers. You may recall that the F3C category consisted of essentially hovering maneuvers up through 1989 because of the very high "K" Factors that were assigned to the most difficult "SHOVEL" and "OBSERVATION" hovering maneuvers. Perhaps a substitution of more difficult hovering maneuvers (without "K" factors) is called for to bring the best of the helicopters' ability to the fore.

In summary, the 1991 FAI F3C World Championships was very well organized and run in a professional, fair and friendly atmosphere. I do have one regret, and that is that I spent too little time sightseeing in Australia. The small snapshot that I did get has convinced me to return in the not-too-distant future for a much better (longer) look. And finally, I would like to thank the Model Aeronautic Association of Australia, the Victorian Model Aeronautic Association and especially the Melbourne Radio Control Helicopter Club for a job very well done.