15.5 Section 4C Volume F3 - RC Aerobatics

Comments PU in red colour

F3A – Radio Control Aerobatic Aircraft

a) 5.1.2 General Characteristics of RC Aerobatic Models F3 Aero Subcommittee

Add the text to the end of sub-paragraph f) as shown:

f) With the propulsion device running at full power, the measurement will be taken 90 degrees on the right-hand side, with the nose of the model aircraft pointing into the wind. The SLM microphone shall be placed on a stand 30cm above the ground in line with the propulsion device Other than the helper restraining the model aircraft, and the sound steward, no persons or sound/noise reflecting or sound absorbing objects shall be nearer than 3m to the model aircraft or the microphone. The sound/noise measurement shall be made as part of model processing. Electric powered model aircraft must have installed the same batteries for all model processing procedures. The sound test area must be located in a position that does not create a safety hazard to any person around. **Noise measurements shall not be taken with wind readings taken over 30 sec of more than 5m/s. Gusts shall be avoided.**

Reasons: Measurement with more than 5 m/s will lead to wrong results.

b) 5.1.8 Marking France

Amend sub-paragraph 5.1.8 b) with the deletion and addition of text as follows:

b) Each manoeuvre may be awarded marks by each of the judges during the flight. Every manoeuvre starts with the mark of 10 points and will be downgraded for each defect during the execution of the manoeuvre in one or multiple ~~0.5~~ **1** point steps, depending on the severity of the defect. The remaining points result in the mark for the manoeuvre. During tabulation, these marks are multiplied by a coefficient (K-Factor) which relates to the difficulty of the manoeuvre.

Reasons: During the last 2017 F3A European Championship in BELGIUM it appears that marking utilizing half points had an opposite effect to expected, and didn't help to rank the pilots. It seems to be common sense to go back to a proven marking.
PU: We had very close results, too at other Cat 1 event using full points.
Technical Secretary Comment: The change from 1 to 0.5 point steps was agreed at Plenary 2017 for introduction in 2018. This proposal will result in substantial changes in Manoeuvre Execution Guide (Annex 5B), which have not been included.

c) 5.1.10 Judging F3 Aero Subcommittee

Add the following text as sub-paragraph i), with consequent renumbering of the existing sub-paragraphs i) and j) to j) and k) respectively:

i) For the final rounds of a World or Continental Championship with more than 40 competitors, two "Judges' Assistants" (one from the panel and the reserve judge, if available, or if not two from the panel) will serve to assist the judges. They will inform the Judging panel of any wrong manoeuvres in the

flight. Judge assistant assignments will be done by random draw for each final round. Judge assistants assigned from the panel are eligible for only one of the final rounds.

Reason: The 2017 World Championship showed that judges need some help to recognise all wrong performed manoeuvres, especially with new turn around manoeuvres implemented in 2012. F3A final schedules - the unknown schedules - are very difficult, and wrong manoeuvres may be flown by pilots. According to 5.1,8c) "...Zero scores need not be unanimous, **except in cases where an entirely wrong manoeuvre was performed**. ..." Judges' assistants can concentrate on correctness of manoeuvres and give helpful advice to the other judges to apply 5.1.8c)

A test with judges' assistants was done at the 2018 European Championship and was well appreciated by the judges panel.

d) 5.1.8 Marking **F3 Aero Subcommittee**

Amend sub-paragraph c) with the addition of the text shown:

c) Any manoeuvre not completed, or flown out of sequence with the stated schedule shall be scored zero (0). Zero scores need not be unanimous, except in cases where an entirely wrong manoeuvre was performed. **When Judging Assistants (according 5.1.10 i) are being utilised, they will inform the Judging panel of any wrong manoeuvres in the flight.** Judges must confer after the flight in these cases, bringing it to the attention of the flight line director/contest director on site.

Reasons: Consequence of new proposed subparagraph 5.1.10 i)

e) 5.1.8 Marking **F3 Aero Subcommittee**

Add text to sub-paragraph e) as shown below:

e) The manoeuvring zone is vertically spread in front of and at a distance of approximately 150 m from the pilot. It is laterally limited by two virtual vertical planes above the extension of two lines on the ground each at an angle of 60 degrees left and right from the intersection of a centre line with the safety line. The centre line is positioned on the ground perpendicular to the safety line on the ground which is parallel to the runway. Two starting circles of 3m diameter are marked on the **middle of the** runway, one left and one right at minimum 15 m off the centre line, also serving for sound/noise measurement, if required. The upper limit of the manoeuvring zone is defined by the virtual plane stretching up 60 degrees from the ground at the intersection of all ground lines.

Reason: More precise wording.

f) 5.1.8 Marking **F3 Aero Subcommittee**

Amend sub-paragraph g) with the deletions and additions as shown below:

g) Manoeuvres must be performed such that they can be seen clearly by the judges. If a judge, for some reason beyond the control of the competitor, is not able to follow

the model aircraft through the entire manoeuvre, he ~~may~~ **shall** set the "Not Observed" (N.O.) mark. In this case, the judge's mark for that particular manoeuvre will be the average of the numerical marks with two digits after the decimal point, rounded up. ~~If no such average is achievable~~, **If the majority of the judges score "Not Observed",** the competitor has the right for a reflight as per paragraph 5.1.6. If, for some reason within the control of the competitor, a judge is not able to follow the model aircraft through the entire manoeuvre, he has to downgrade the manoeuvre accordingly.

Reason: More fairness to pilots. It happened that one or two of five judges scored manoeuvres which were influenced by fog and not totally visible.

g) 5.1.8 Marking **F3 Aero Subcommittee**

Modify the text in sub-paragraph m) as shown below:

m) The individual manoeuvre scores given by each judge for each competitor must be made public at the end of each ~~round~~ **flight** of competition. The team manager must be afforded the opportunity to check that the scores on each judge's score document correspond to the tabulated scores (to avoid data capture errors). The score board/monitor must be located in a prominent position at the flight line, in full view of the competitors and the public.

Reason: More precise wording.

h) 5.1.9 Classification **F3 Aero Subcommittee**

Add text to sub-paragraph a) as shown below:

a) For World and Continental Championships, each competitor will have four preliminary (Schedule P) flights, with the best three normalised scores counting to determine the preliminary ranking. The top half, but not more than 30 competitors, will then have two additional semi-final flights flying the known finals schedule. The total of the best three preliminary flights **of semi-finalists** (normalised again to 1000 points) will count as one score along with the two semi-finals scores to provide three scores, the best two to count for semi-finals classification. ...

Reason: More precise wording. With new normalization (accepted in 2017) the total of three best rounds of the Preliminaries must be renormalized only for semi-finalists because it counts as a round of the semi-final. The number of semi-finalists has to be taken in account for normalisation.

i) 5.1.9 Classification **France**

Add text to sub-paragraph a) after the first paragraph as shown below:

a) For World and Continental Championships, each competitor will have four preliminary (Schedule P) flights, with the best three normalized scores counting to determine the preliminary ranking. The top half, but not more than 30 competitors, will then have two additional semi-final flights flying the known finals schedule. The total of the best three preliminary flights (normalized again to 1000 points) will count

as one score along with the two semi-finals scores to provide three scores, the best two to count for semi-finals classification.

Alternatively for World Championships with three panels of five judges, each competitor will have three preliminary (Schedule P) flights, with the best two normalized scores counting to determine the preliminary ranking. The top half, but not more than 30 competitors, will then have two additional semi-final flights flying the known finals schedule. The total of the best two preliminary flights (normalized again to 1000 points) will count as one score along with the two semi-finals scores to provide three scores, the best two to count for semi-finals classification. ...

Reason: To match the proposal for saving costs when there are more than 80 competitors but not enough to have a balanced budget at a WC.

This proposal is against the interest of the majority of pilots who don't take part at semifinal and final. They would have only three preliminary flights. It is better to exceed the number of 80 pilots for 10 judges a little bit which is possible according to the rules regarding the number of participants outside Europe during the last years. It will be complicated, too to to have a starting order with two flightlines and three judges groups.

j) 5.1.9 Classification **F3 Aero Subcommittee**

Modify sub-paragraph b) as shown below:

b) The top ten competitors of the semi-finals of a World or Continental Championship where there is an entry of more than 40 competitors, will then have ~~four~~ **three** additional flights to determine the individual winner. For a World or Continental Championship with less than 40 competitors, the top five competitors will advance to the finals. ~~Two~~ **One** final flight~~s~~ will be the current known finals schedule (F) and two will be unknown schedules (two different schedules, UK1 and UK2) (see 5.5). The known and unknown schedules must be flown ~~in alternating sequence, starting with the known finals schedule (F).~~ **in the following sequence: Unknown schedule 1, Final schedule F, Unknown schedule 2**. ~~The best score from the known schedule will be combined with the scores from both unknown schedules~~ **The scores of all three schedules will count** for final classification. In the case of a tie the semi-final score will be used to decide the higher classification.

Reason: The final day on World and Continental Championships is a very tough day for organizers and officials. Judges finalise their hard work, organizers have to prepare the price giving ceremony, the jury has to approve the results. With three final rounds it would be also possible to have some time to check results and to prepare prize giving and to present F3A to spectators and to have some show flights.

As both unknowns count, it isn't necessary to fly two F-Rounds and to drop off the lowest of them.

k) 5.1.9 Classification **F3 Aero Subcommittee**

Modify sub-paragraph a) as shown below:

a) For World and Continental Championships, each competitor will have four preliminary (Schedule P) flights, with the best three normalised scores counting to determine the preliminary ranking. The top half, but not more than 30 competitors, will then have two additional semi-final flights flying the known finals schedule. The total of the best three preliminary flights (normalised again to 1000 points) will count

as one score along with the two semi-finals scores to provide three scores, the best two to count for semi-finals classification.

In the event of adverse weather where flying of all rounds is not possible the classification would be determined on rounds completed as follows:
Preliminaries: one round=one flight counts, two rounds= best one flight counts, three rounds=best two flights count.
Semifinals: one round=the total of the counting preliminary flights (normalised again to 1000 points) with the one semifinals flight count.
Finals: ~~one round=one flight counts, two rounds=two flights count, three rounds, best one flight out of first and third round with flight of second round count.~~ **All finished rounds count.**

Reason: Consequence of proposal for 5.1.9 b)

l) 5.1.9 Classification **France**

Amend sub-paragraph b) as shown below:

b) The top ten competitors of the semi-finals of a World or Continental Championship where there is an entry of more than 40 competitors, will then have four additional flights to determine the individual winner. For a World or Continental Championship with less than 40 competitors, the top five competitors will advance to the finals. Two final flights will be the current known finals schedule (F) and two will be unknown schedules (two different schedules, UK1 and UK2) (see 5.5). The known and unknown schedules must be flown in alternating sequence, starting with the known finals schedule (F). The best **three** scores from **both** ~~the~~ known ~~schedule will be combined with the scores from~~ and **both** unknown schedules **will determine** the final classification. In the case of a tie the semi- final score will be used to decide the higher classification.

Reason: Both the Preliminary and Semi-finals classification give a chance to pilots to place normally in case of a technical problem during a flight by skipping one flight.
Having a technical issue during an unknown final flight actually ruin all the chance of the pilot who place immediately last in the finals.
This is not fair, and don't take in account all the training, and personal investment of the pilot concerned.
The finals should be treated as Preliminary and Semi-finals are.
F3A Finals must not be a lottery.
This proposal is a reaction on the subcommittee proposal 15.5 k. Normally finalist should be able to have an equipment which works reliable. But we might overthink our proposal during the Technical Meeting as our voting was not unanimously.

m) 5.1.9 Classification **F3 Aero Subcommittee**

Modify sub-paragraph d) by deleting the text as shown below:

d) For World and Continental Championships, the scores for all rounds, preliminary, semi-finals and finals, will be computed using the Tarasov-Bauer-Long (TBL) statistical averaging scoring system. Only computer tabulation systems containing the TBL algorithm and judge analysis programs that have been Subcommittee approved can be used at World and Continental Championships. ~~To be eligible for approval a computer tabulation system has to deliver in traceable test runs copies of the official results of one World Championship and one European Championship held within the previous five years at the date of application.~~

Reason: With new normalization (accepted in 2017) it is not possible to test the software with the official results of former World and Continental Championships. Within the subcommittee there are experienced people to approve and check software.

n) 5.1.9 Classification **France**

Add text to sub-paragraph e) as shown below:

e) All scores for each round, preliminary, semi-final and finals, will then be normalized as follows: **When all competitors have** ~~The average score of the top half of competitors~~ flown in front of a particular group of judges (i.e. a round), **the highest score** shall be awarded 1000 points. The remaining scores for that group of judges are normalized to a percentage of the 1000 points in the ratio of actual score over this average score.

$$\text{Points } x = \frac{S_x}{S_w} \times 1000$$

Points *x* = points awarded to competitor *x*
S_X = score of competitor *x*
S_W = score of winner of round.

Reason: During the last 2017 F3A European Championship in BELGIUM and different World Cup or other events, the classification system showed a lot of imperfections, the same that lead the F3C to stop using it during a WCh event.
For me no problem to go back to old normalisation. I presented you some examples to compare ranking lists with old and new nornalisation. May be you have had some more experience in your countries. Waiting for your comments.

o) 5.1.10 Judging **France**

Amend sub-paragraph a) with the additional text as shown below, then make consequential amendments in c) and i) as shown:

a) For a World or Continental Championship with more than 80 competitors, the organizer must appoint four panels of five judges each (a total of twenty judges). The judges must be of different nationalities. Those selected must reflect the approximate geographical distribution of teams participating in the previous World Championship with the final list approved by the CIAM Bureau. At least one third, but not more than two thirds of the judges must not have judged at the previous World Championship. Judge assignment to the four panels will be by random draw.

Option: For a World Championship with more than 80 competitors, but not enough to have a balanced budget the organiser has the possibility to appoint three panels of five judges each (a total of fifteen judges). The judges must be of different nationalities. Those selected must reflect the approximate geographical distribution of teams participating in the previous World Championship with the final list approved by the CIAM Bureau. At least one third, but not more than two thirds of the judges must not have judged at the previous World Championship. Judge assignment to the three panels will be by random draw.

cont/…

c) For the semi-final rounds of a World Championship the judges will be arranged in two groups of ten judges **or one group of seven judges and one group of eight judges (case of 15 judges)**. Assignment to the two groups will be by random draw.

i) For the final rounds of a World or Continental Championship with more than 80 competitors, **one panel of twenty or fifteen judges may be used for the final rounds**. ~~the twenty judges will be arranged in three groups, a left hand group of five judges to judge only the left turn-around manoeuvres, a centre group of ten judges to judge only the centre manoeuvres and a right hand group of five judges to judge only the right turn-around manoeuvres. Judge assignments to the three groups will be by random draw for rounds one and two (one known and one unknown round) with a second draw for rounds three and four, except a judge will not serve in the same group as in the previous draw. For each competitor, the score from the three groups (following TBL computation) will be combined for a total score for the flight.~~

Reason: A European F3A championship brings together around 70 pilots and requires 10 judges whereas a World Championship organised in Europe brings together a hundred pilots and requires 20 judges.

If organized outside Europe, it only brings together around 80 pilots.

It is therefore clear that the amount of the commitments represents only a small part of the budget of a World Championship and the organiser has some difficulties to establish a non-deficit budget.

In this situation this proposal is to reduce the number of judges to 15, saving one day of competition, (8 days instead of 9 days) when the number of entries don't help to balance the budget.

3 panels of 5 judges (A, B, C) and 3 groups of pilots (GR1, GR2, GR3)

3 preliminary flights for all pilots on the program P.

Reserve day which allows to organise the briefing of the judges on the program F with training flights and also to the pilots qualified for the semi-finals to train on the program F.

Two semi-final rounds with a panel of 7 judges and another one of 8 judges.

Finals with 2 rounds of F program and 2 rounds of unknown programs with a panel including all the judges.

See my comment on proposal 15.5 i

p) 5.1.10 Judging **F3 Aero Subcommittee**

Replace the text in sub-paragraph i) as shown below. Note: if item c) regarding the addition of new sub-paragraph i) is agreed, this becomes sub-paragraph j):

i) ~~For the final rounds of a World or Continental Championship with more than 80 competitors, the twenty judges will be arranged in three groups, a left hand group of five judges to judge only the left turn-around manoeuvres, a centre group of ten judges to judge only the centre manoeuvres and a right hand group of five judges to judge only the right turn-around manoeuvres. Judge assignments to the three groups will be by random draw for rounds one and two (one known and one unknown round) with a second draw for rounds three and four, except a judge will not serve in the same group as in the previous draw. For each competitor, the score from the three groups (following TBL computation) will be combined for a total score~~

~~for the flight~~. **All judges, (except the Judges assistants), will judge all manoeuvres of the final rounds of World and Continental Championships. Electronic scribes have to be used for final rounds.**

Reason: Splitting the panel into three groups was introduced for World Championships with more than 80 Competitors and 20 judges a long time ago because there wasn't enough space for 40 people (judges + scribes). With electronic scribes, all judges have enough space in the judging area at the competitions' sites.

Electronic scribes have been used at several Cat 1 events for several years and allow judges to concentrate much better on judging. Human scribes are not necessary anymore.

Judges assistants will help with wrong performed manoeuvres.

The scoring system will be simplified because it isn't necessary to have different TBL Groups any more.

q) 5.1.13 Schedule of Manoeuvres F3 Aero Subcommittee

Amend introduction, delete obsolete schedule A-18; add new schedule A-23 as shown below:

~~For 2017-2018 Schedule A-18 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-19 Schedules.~~
For 2019-2020 Schedule A-20 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-21.
For 2021-2023 Schedule A-23 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-23 Schedules.

Advanced Schedule A-23 (2021-2023)	**K-Factor**
A-23.01 Top Hat with half roll on top	**K 3**
A 23-02 Half Square Loop	**K 2**
A-23.03 Push-Pull-Push Humpty-Bump with half roll, half roll	**K 3**
A-23.04 Half Square Loop on Corner with half roll	**K 3**
A-23.05 Forty Five Degree Upline with roll	**K 4**
A-23.06 Half Eight Sided Loop	**K 3**
A-23.07 Roll Combination with two consecutive half rolls in opposite direction	**K 3**
A-23.08 Pushed Immelman Turn with half roll	**K 2**
A-23.09 Inverted Spin two and a half turns	**K 4**
A-23.10 Pull-Pull-Pull Humpty-Bump, with half roll. (Option: quarter roll, quarter roll)	**K 3**
A-23-11 Reverse Figure ET	**K 3**
A-23.12 Square Loop with half roll	**K 2**
A-23.13 Figure M with quarter rolls	**K 5**
A-23-14 Trombone	**K 3**

A.23.15 Triangle with two consecutive quarter rolls, two consecutive quarter rolls	**K 3**
A-23.16 Reverse Shark Fin with half roll	**K3**
A-23.17 Loop with knife-edge flight	**K4**
	Total K = 53

Reason: F3A schedules change every two years.

r) 5.1.13 Schedule of Manoeuvres **F3 Aero Subcommittee**

Amend introduction, delete obsolete schedule F-19, add new schedule F-23 as follows:

~~For 2018- 2019...Schedule F-19 will be flown in the semi-finals, as well as in the finals, alternating with unknown schedules.~~
For 2020-2021 Schedule P-21 will be flown in the preliminaries. Schedule F-21 will be flown in the semi-finals, as well as in the finals, ~~alternating~~ **together** with unknown schedules.
For 2022-2023, Schedule F-23 will be flown in the semi-finals, as well as in the finals, together with unknown schedules.

Semifinal/Final Schedule F-23 (2022-2023)	**K-Factor**
F-23.01 Knife Edge Rolling Loop	**K 5**
F 23-02 Stall Turn with snap roll, roll	**K 4**
F-23.03 Eight consecutive 1/8 rolls	**K 4**
F-23.04 Reverse Shark Tooth with three consecutive quarter rolls, three quarter roll	**K 3**
F-23.05 Square Loop on corner with quarter roll, half roll, half roll, quarter roll	**K 5**
F-23.06 Push-Pull-Pull Humpty-Bump with consecutive half rolls, integrated roll, snap roll	**K 4**
F-23.07 Horizontal Eight with rolls integrated	**K 6**
F-23.08 Reverse Figure ET with half roll, consecutive quarter rolls	**K 3**
F-23.09 Knife Edge Forty Five Degree Upline with two consecutive snap rolls in opposite direction	**K 6**
F-23.10 Reverse Vertical Shark Tooth with two consecutive half rolls in opposite direction, two consecutive quarter rolls, roll	**K 3**
F-23-11 Reverse Double Fighter Turn with three consecutive quarter rolls, half roll, half roll, three consecutive quarter rolls	**K 6**
F-23.12 Figure Six, with roll	**K 2**
F-23.13 Spin with two and a quarter turns, two and a quarter turns in opposite direction	**K 5**
F-23-14 Half Cuban Eight, with two half rolls in opposite direction, one and half snap	**K 4**
A.23.15 Rolling Circle with half rolls in opposite direction integrated	**K 5**
F-23.16 Half Square Loop with half rolls in opposite direction	**K 2**

F-23.17 Avalanche (from top) with half rolls integrated, snap, half roll integrated	**K 5**
	Total K = 72

Reason: F3A schedules change every two years.

s) 5.1.13 Schedule of Manoeuvres **F3 Aero Subcommittee**

Amend introduction, delete obsolete schedule P-19; add new schedule P-23 as shown below:

~~For 2018-2019 Schedule P-19 will be flown in the preliminaries~~.
For 2020-2021 Schedule P-21 will be flown in the preliminaries. Schedule F-21 will be flown in the semi-finals, as well as in the finals, ~~alternating~~ **together** with unknown.
For 2022-2023 Schedule P-23 will be flown in the preliminaries.

PRELIMINARY SCHEDULE P-23 (2022-2023)	**K-Factor**
P-23.01 Top Hat with two quarter rolls up, full roll, two quarter rolls down	**K 4**
P-23.02 Half Square Loop with half roll	**K 2**
P-23.03 Pull-Pull-Push Humpty-Bump with roll, half roll	**K 4**
P-23.04 Half Square Loop on Corner with half roll, half roll	**K 3**
P-23.05 Forty Five Degree Upline, with one and a half snap roll	**K 5**
P-23.06 Half Eight Sided Loop	**K 3**
P-23.07 Roll Combination with two consecutive half rolls, two consecutive half rolls in opposite direction	**K 4**
P-23.08 Pushed Immelman Turn with half roll	**K 2**
P-23.09 Inverted Spin two and a half turns	**K 4**
P-23.10 Pull-Pull-Push Humpty-Bump, with half rolls. (Option: three quarter roll, quarter roll)	**K 3**
P-23.11 Reverse Figure ET with two consecutive half rolls in opposite direction, two consecutive quarter rolls	**K 4**
P-23.12 Half Square Loop with half roll	**K 2**
P-23.13 Crossbox Figure M, with three quarter rolls	**K 5**
P-23.14 Fighter Turn with quarter rolls	**K 4**
P-23.15 Triangle with half roll, two consecutive quarter rolls, two consecutive quarter rolls, half roll	**K 3**
P-23.16 Reverse Shark Fin with half roll, two consecutive quarter rolls	**K 3**
P-23.17 Loop with half roll integrated	**K 5**
	Total K = 60

Reason: F3A schedules change every two years.

t) Annex 5A: F3A – Description of Manoeuvres **F3 Aero Subcommittee**

*Delete the existing manoeuvre descriptions of schedules A-18, P-19, and F-19 and replace with descriptions of A-23, P-23 and F-23. Refer to Agenda **Annex 7a.***

Reason: F3A schedules change every two years.

u) Annex 5N: Rules for World Cup Events F3A, F3P, F3M F3 Aero Subcommittee

In sub-paragraph 5N.3 Contests, modify d) as shown below:

5N.3 Contests

d) rounds should be organised in one of the following combinations, while rounds of F-Schedules may be run for a limited number of competitors only as a "fly-off".
- Four rounds of P-schedule, two rounds of F-schedule. The total of the best three preliminary flights (normalised again to 1000 points) will count as one score along with the two fly-off scores to provide three scores, the best two to count for classification.
- Three rounds of P-Schedule with the best two flights counting
- Two rounds of P-Schedule with the best one flight plus one round of F-Schedule counting
- Three rounds of P-Schedule with the best two flights plus one round of F-Schedule counting

~~P- and F-Schedules must be performed in full, 17 manoeuvres each~~. **Other combinations are subject to be confirmed by the World Cup Coordinator or the F3 Aerobatics Chairman in advance.**

Reason: More flexibility to organizers, as well as the possibility to adapt the schedule to local requirements.

Class F3M – R/C Large Aerobatic Aircraft

v) 5.10.4 Number of flights Spain

Modify paragraph 5.10.4 as follows:

(~~A competition for model aircraft class F3M unlimited is based on three rounds:~~
~~- A minimum of one flight of 1 known sequence, valid for one year.~~
~~- A minimum of one flight of 1 unknown sequence. This unknown sequence is given to each pilot before the round, without any possibility of practising the sequence. The difficulty of this round shall be equivalent to that of the known sequence.~~
~~- A minimum of one flight of a 4 minutes freestyle program chosen by the competitor.~~
~~Each competitor has the right to a minimum of three official flights (one known schedule + one unknown schedule + one freestyle schedule).~~
A competition is formed by two independently-scored series: Classical Aerobatics series and a Free-style series.
The classical aerobatics will have the two following rounds:
- A minimum of two flights of 1 known sequence, valid for one year.
- A minimum of two flights of different unknown sequences. These unknown sequences are given to each pilot before the round, without any possibility of practising the sequence. The difficulty of this round shall be equivalent to that of the known sequence.
- The best known flight, and the best unknown flight normalized scores will be considered.

The Free-style series will include two flights of a four-minutes free-style program, chosed by the competitor. The best normalized score of the two flights will be considered.

Reason: To make the FAI rules closer to the regulations used in the European Acro Cup and IMAC-type competitions.

Technical Secretary Note: Further on a proposal refers to Classic Aerobatics, yet here it is Classical Aerobatics. Which name is to be used?

w) 5.10.5 Definition of an attempt — Spain

Amend paragraph 5.10.5 as shown below:

There is an attempt when the competitor is given permission to start.

~~An attempt begins when the pilot or caller makes a visual signal indicating to the judges when the pilot is starting the sequence. A visual signal is mandatory to initiate the attempt. If there is no visual signal made the pilot becomes subject to the other standard constraints stipulated in these rules, e.g., time limit for starting, no aerobatics before starting the sequence, etc. Once the attempt is made by means of the visual signal, judging will begin as soon as the aircraft departs from the wings-level horizontal entry line and enters the first figure of the sequence. The horizontal entry line to the first figure of a sequence is not judged.~~

An attempt starts when the pilot or their assistant indicates to the competition judges the entry in the box, by an audible and visual signal meaning BOX or IN THE BOX (or equivalent expression) in the official language of the competition.

If no signal is made by the pilot or the assistant, the judges will not score the flights and will inform to the Director of the contest.

When the signal is made, the judges will start the score of the full figure made by the pilot, scoring "zero" the previous ones.

Reason: The visual signal forces the judges to look to the pilot, all the time. The experience indicates that there is a possible confusion of the signal with the fact that the assistant will extend their arm to avoid the side sunlight.

x) 5.10.9 Aerobatic airspace — Spain

Amend sub-paragraph b) in 5.10.9 regarding the Safety line, as follows:

b) Safety line:

~~From the competitor´s position, the "safety line" is located 30 metres ahead of the pilot point. This line delimits the "no-fly" zone for safety reasons and the aircraft must at all times remain on the side of the safety line away from the contestants, pits and spectators. The safety line extends to infinity. The judges shall zero (0) any figures where the aircraft completely or partially crosses the safety line. For repeated safety line violations by a competitor during a flight, the contest director may ground the flight in progress and zero the round. If a competitor repeatedly violates the safety line, the contest director may disqualify the competitor.~~

~~If there is no natural barrier or demarcation at or beyond 30 meters that can be used to clearly mark the safety line, the contest director must set up clearly visible markers at the safety line distance for the judges to use in enforcing deadline observance.~~

~~Audible and visual signals to indicate violations of the aerobatic airspace are not to be employed.~~

From the competitor's position, the "safety line" is located 20 metres ahead of the pilot point, 30 metres ahead of the judges and a minimum of 50 metres ahead of the spectators.

This line marks the "no-fly" zone for safety reasons and the aircraft must at all times remain on the flying side of the safety line. The safety line extends to infinity. The judges shall zero (0) any figures where the aircraft completely or partially crosses the safety line. For repeated safety line violations by a competitor during a flight, the contest director may ground the flight in progress and zero the round. If a competitor repeatedly violates the safety line, the contest director may disqualify the competitor.

If there is no natural barrier or demarcation that can be used to clearly mark the safety line, the contest director must set up clearly visible markers at the safety line distance for the judges to use in enforcing deadline observance.

Reason: It is better than the safety distance in known and unknown flights and free style flights, be the same.

y) 5.10.10 Marking — Spain

After sub-paragraph i) delete the section titled '1. Sound presentation score for Known and Unknown flights', as shown below. Renumber the following paragraphs.

~~1. Sound presentation score for Known and Unknown flights~~:

~~a) Judges will evaluate each individual flight flown in its entirety for overall sound presentation. Each judged Known and Unknown sequence, shall have one "figure" added to the end of the score sheet after individually judged figures. This figure shall be known as the Sound Score. The Sound Score will have a 30 K value.~~

~~b) The sound presentation will be scored with a mark on a scale of 10 to 0 with 10 denoting "Very Quiet," 5 denoting "normal" and 0 denoting "Very noisy." Whole mark will be used for scoring. This sound mark will then be multiplied by the 30 K value and included in the total flight raw points score for the sequence. Note that each judge's score is independent of the other(s) and no conferencing on the sound score is required.~~

~~c)If a competitor receives a sound score of three (3) or less for the round from two or more judges, the competitor and his team manager will be notified of the problem and will be requested by the Contest Director to adjust or modify the aircraft in order to reduce the sound level before the next round. If that competitor, after notification, again receives a sound score of three (3) or less for the next round from two or more judges, that pilot will be disqualified.~~

Reason: It is a subjective appreciation, and has no sense with the incorporation of the electrical engines. A sound measurement, made at the start of the flight, will be enough.

z) 5.10.11 Classification Spain

Delete sub-paragraphs c) d) and e) and replace with a single paragraph c) as shown below:

~~c) Final classification will be done considering the sum of the scores of the three normalized flights: known, unknown, and freestyle multiplied by the following coefficients:~~
~~Known .....40%~~
~~Unknown .....40%~~
~~Freestyle.....20%~~
~~d) In the case where more than one flight of each round have been completed, the sum of the best known flight, the best unknown flight, and the best freestyle flight normalized scores will be considered.~~
~~Example: One flight known, two flights unknown, and one free-style flight have been completed: Classification is done by adding the known normalized flight score and the best score of the two unknown normalized flights scores and the freestyle normalized flight score.~~
~~e) The highest combined scores will determine the winner. In case of ties, all the normalized flights of the contestant shall be used to determine the winner.~~

c) Final classification of the Classic Aerobatics will be done considering the sum of the scores of the two best normalized flights: known and unknown, multiplied by the following coefficients:
Known 50%
Unknown 50%

The highest combined scores will determine the winner. In case of ties, all the normalized flights of the contestant shall be used to determine the winner.

Reason: This rule it is due to the presence of two categories in the competition.

aa) 5.10.11.1 Classification (For World & Continental Championships) Spain

Amend this section. Delete the existing sub-paragraphs and replace in their entirety with the text shown below:

5.10.11.1 For World and Continental championships:

~~a) Preliminary: Each competitor will have 6 preliminary flights.~~

~~(2) Flights of 1 known sequence~~

~~(2) Flights of 1 unknown sequence~~

~~(2) Flights of a 4 minutes freestyle schedule of the competitor's choice~~

~~b) The sum of the best known flight, the best unknown flight, and the best freestyle flight normalized scores will be considered to determine the preliminary ranking.~~

~~c) The top ten pilots are qualified for the final.~~

~~d) In the event of adverse weather conditions where no further flying is possible, the preliminary classification may be determined by the sum of the best flights completed.~~

~~e) Final: Each of the ten competitors will have 6 final flights.~~

~~(2) Flights of 1 known sequence~~

~~(2) Flights of 1 unknown sequence~~

~~(2) Flights of a 4 minutes freestyle schedule of the competitor's choice~~

~~f) The sum of the best final known flight, the best final unknown flight, and the final best freestyle flight normalized scores will be considered to determine the final ranking.~~

~~g) In the event of adverse weather conditions where no further flying is possible, the final classification may be determined by the sum of the best flights completed.~~

Classical Aerobatics series:

a) Preliminary: Each competitor will have 4 preliminary flights.

2 flights of the known sequence

2 flights of different unknown sequences

b) The sum of the best known flight, and the best unknown flight normalized scores will be considered to determine the preliminary ranking.

c) The top ten pilots are qualified for the final.

d) In the event of adverse weather conditions where no further flying is possible, the preliminary classification may be determined by the sum of the best flights completed.

e) Final: Each of the ten competitors will have 4 final flights.

2 flights of the known sequence

2 flights of different unknown sequences

f) The sum of the best final known flight and the best final unknown flight normalized scores will be considered to determine the final ranking.

g) In the event of adverse weather conditions where no further flying is possible, the final classification may be determined by the sum of the best flights completed.

Free Style series:

a) Preliminary: Each competitor will have 2 preliminary flights.

b) The design of the 4 minutes freestyle flights will be determined by the competitor.

c) The best normalized score of the two flights will be considered to determine the preliminary ranking.

d) The top ten pilots are qualified for the final.

e) In the event of adverse weather conditions where no further flying is possible, the preliminary classification may be determined by the sum of the best flights completed.

f) Final: Each of the ten competitors will have 2 final flights.

g) The design of the 4 minutes freestyle flights will be determined by the competitor.

h) The best freestyle flight normalized scores will be considered to determine the final ranking.

i) In the event of adverse weather conditions where no further flying is possible, the final classification may be determined by the sum of the best flights completed.

Reason: This rule it is due to the presence of two categories in the competition.

ab) 5.10.11.2 Team Classification — Spain

Replace the note which is after sub-paragraph a) as shown below:

a) The team classification is established at the end of the competition (after the finals) by adding the numerical final placing of the best three team members of each nation. Teams are ranked from the lowest numerical scores to the highest, with complete three-competitor teams, ahead of two-competitor teams, which in turn are ranked ahead of one-competitor teams. In the case of a tie, the best individual placing decides the team ranking.

~~b) Note: Final flights to determine the individual winner are usually only required for World and Continental Championships. For open international events, national championships, and domestic competitions, In the case where more than one flight of each round have been completed, the sum of the best known flight, the best unknown flight, and the best freestyle flight normalized scores may be used to determine the individual winner and team placing~~

Note: Final flights to determine the individual winner are usually only required for World and Continental Championships. For open international events, national championships, and domestic competitions where more than one flight of each round have been completed, the sum of the scores corresponding to the best known flight and the best unknown flight may be used to determine the individual winner and team placing in the Classical Acrobatics category. The same system will be used to decide the winners of the Free-style category.

Reason: This rule it is due to the presence of two categories in the competition.

ac) 5.10.13 Organisation for R/C Large Aerobatic Model Aircraft Contests — Spain

Add the following to 5.10.13 t):

t) Before to start the sequence and before landing, competitors shall only be allowed to perform the following trim and positioning manoeuvres:

- Turns.
- Half Cubans with only a single ½ roll on the 45 down line.
- Reverse Half Cubans with only a single ½ roll on the 45 up line.
- The ½ roll is optional based on aircraft positioning required starting the sequence.
- Half loops up or down (Immelman or Split S) with only one half roll on entry or exit.

-Single half roll to inverted immediately before to start the sequence for the case in which an inverted entry to the first figure is required.

-Single half roll to upright after the end of sequence for the case in which an inverted exit from the last figure is required.

-A vertical up or down line with a simple push/pull for entry and exit. A single 1/2 roll is allowed on this vertical line only if required to orient the aircraft properly for entry to the first figure.

-Humpty Bump with ¼ of upward roll and ¼ of falling roll

Reason: Positioning manoeuver on the X-axis, approaching or putting away the model.

ad) 5.10.16.1 Marking Criteria Spain

Replace the entire section as shown below:

Judging of the Freestyle program comprises three elements. Each element contains several criteria, with marks ranging from 10 to 0. Half (0.5) points may be used in judging. Each mark is multiplied by a difficulty coefficient (K-Factor).

~~a) Technical performance: Three criteria~~
~~Technicality of the manoeuvres: K= 20.~~
~~Complicated and technically challenging manoeuvres must be awarded higher marks, provided there is not a lack of quality in their execution. Simple and less complex manoeuvres should attract fewer marks.~~
~~Quality: K= 20.~~
~~The entire flight must be devoid of "missed" manoeuvres, and must exhibit all-round good quality. The fact that it is a freestyle schedule must not allow the performance to become sub-standard in technicality and quality. It is not intended to be a circus performance.~~
~~Diversity: K= 20~~
~~The competitor must avoid repetitive use of the same manoeuvres, and only in exceptional circumstances will repeat manoeuvres be tolerated to emphasise a particular passage in the music.~~
~~b) Artistic impression: Two criteria~~
~~Harmony with music, program choreography: K= 40~~
~~The music (choreography) has to enhance the presentation and to create a complementary atmosphere. The flight performance should be synchronised with the music and must not be a "3Dsketch" with background music. On the other hand the music must not detract from the presentation. The selected music piece(s) should contain fast-slow, soft-loud and dramatic sections. The manoeuvres should follow the music and end with it. The mood of the selected music should be reflected in the manoeuvres and the presentation. Show effects can support this. Music pieces with little contrast, variety or tempi result in downgrades.~~
~~Enhancers: Smoke producing devices, or streamers: K=20~~
~~The use of these devices should be used to accentuate or emphasise some manoeuvres. Improper or inefficient use, even if impressive, should not result in full marks being given.~~
~~When, for example, an impressive smoke producing device is used to accentuate a manoeuvre or a dramatic section of music, 3 points mark should be given. If the smoke is used throughout the duration of the flight, only 1 point should be given.~~

~~c) Positioning: Two criteria~~
~~Setting of the manoeuvres: K= 30~~
~~The schedule must be well structured, with good placement and positioning of the manoeuvres, giving judges the best visibility of the entire performance. Marks should be deducted if, by design or by the influence of the wind, the schedule is noticeable biased to the left or to the right.~~
~~Sequence of manoeuvres: K= 30~~
~~The entire flight must retain the interest of judges, with a natural flow from start to finish, with coherent matching of manoeuvres.~~

Difficulty - Technicality of the manoeuvres: K= 20.
Complicated and technically challenging manoeuvres must be awarded higher marks, provided there is not a lack of quality in their execution. Simple and less complex manoeuvres should attract fewer marks.

Diversity: K= 20
The competitor must avoid repetitive use of the same manoeuvres, and only in exceptional circumstances will repeat manoeuvres be tolerated to emphasise a particular passage in the music.

Harmony with music, program choreography: K= 30
The music (choreography) has to enhance the presentation and to create a complementary atmosphere. The flight performance should be synchronised with the music and must not be a "3Dsketch" with background music. On the other hand the music must not detract from the presentation. The selected music piece(s) should contain fast-slow, soft-loud and dramatic sections. The manoeuvres should follow the music and end with it. The mood of the selected music should be reflected in the manoeuvres and the presentation. Show effects can support this. Music pieces with little contrast, variety or tempi result in downgrades.

Precisión - Quality: K= 30.
The entire flight must be devoid of "missed" manoeuvres, and must exhibit all-round good quality. The fact that it is a freestyle schedule must not allow the performance to become sub-standard in technicality and quality. It is not intended to be a circus performance.

Enhancers: Smoke producing devices, or streamers: K=10
To judge the effects of the show, the following rules will be used:
The maximum score is 10.
Engine smoke: 0 (without smoke) – 2 (light smoke) – 4 (dense smoke).
Streamers: 0 (no streamers) – 1 (capacity to launch streamers) – 2 (properly used and fully deployed streamers).
Smoke cartridge: 0 (without cartridges) - 1 (one cartridge on the fuselage) – 2 (two cartridges on the wings).

Confetti: 0 (without confetti) – 2 (throwable confetti, only biodegradable)

Reason: To make the FAI rules closer to the regulations used in the European Acro Cup and IMAC-type competitions.

ae) 5.10.16.2 Safety **Spain**

Add a new sub-paragraph d) to the section as shown below:

d) In the following special cases, the pilots will score zero in the free-style sequence.

- When the safety line is crossed (excluding the take off and the landing).

- To lose fragments of the plane (except fragments of the effects).

- Touching the land, including a tree or the grass.

Reason: In order to unify the safety line position for all flights in the contest.

Class F3P – Radio Control Indoor Aerobatic Aircraft

af) 5.9.13 Schedules of Manoeuvres **F3 Aero Subcommittee**

Delete obsolete schedules AA-19, AP-19, AF-19, add new schedules AA-21, AP-21, AF-21 as follows:

Advanced Schedule AA-21 (2020-2021)

AA-21.01 Cuban Eight with half roll, half roll	**K 3**
AA-21.02 Crossbox Stall Turn combination with quarter roll, quarter roll	**K 3**
AA-21.03 Horizontal Triangle Circle with two half rolls opposite, roll	**K 4**
AA-21.04 Half Reverse Cuban Eight with roll	**K 3**
AA-21.05 Torque Roll	**K 5**
AA-21.06 Half Square Loop on Corner	**K 2**
AA-21.07 Knife-Edge Flight	**K 3**
AA-21.08 Pull-Push-Pull Humpty Bump Crossbox Combination with quarter roll	**K 3**
AA-21.09 Square Loop with half roll, half roll	**K 5**
AA-21.10 Immelman	**K 3**
AA-21.11 Double Key from Top	**K 4**
	Total K = 38

Preliminary Schedule AP-21 (2020-2021)

AP-21.01 Knife-Edge Cuban Eight with quarter roll, half roll quarter roll	**K 4**
AP-21.02 Crossbox Stall Turn combination with quarter roll, two consecutive quarter rolls, quarter roll	**K 4**
AP-21.03 Horizontal Circle with two half rolls opposite integrated	**K 5**
AP-21.04 Half Reverse Cuban Eight with half roll, half roll integrated	**K 3**
AP-21.05 Three quarter Torque Roll, quarter Torque Roll in opposite direction with quarter rolls integrated into the quarter loops	**K 5**
AP-21.06 Half Outside Loop, Loop	**K 2**
AP-21.07 Knife-Edge Roll Combination with three quarter roll, half roll opposite, three quarter roll opposite	**K 4**
AP-21.08 Figure Nine Crossbox Combination with quarter roll, two consecutive quarter rolls, half roll integrated	**K 4**
AP-21.09 Square Loop on Corner with quarter roll, quarter roll	**K 5**

AP-21.10 Comet with half roll, half roll K 3
AP-21.11 Double Key from Top with ¼ roll, ¼ roll K 4
Total K = 43

FINAL SCHEDULE AF-21 (2020-2021)
AF-21.01 Half Hourglass with two consecutive one eighth rolls, quarter roll, half roll K 4
AF-21.02 Half Cuban Eight with roll integrated, two consecutive quarter rolls in opposite direction K 3
AF-21.03 Vertical Square Eight with ¼ roll, ½ roll, ¼ roll, ¼ roll, ½ roll, ¼ roll K 5
AF-21.04 Pull-Push-Pull Humpty Bump with quarter roll, two consecutive opposite half rolls integrated, quarter roll K 4
AF-21.05 Vertical Eight with half torque roll, half roll integrated, half torque roll, half roll integrated K 6
AF-21.06 Corner Combination with two consecutive quarter rolls, three quarter roll K 2
AF-21.07 Reverse Double Fighter Turn with quarter roll, half roll, half roll, quarter roll K 6
AF-21.08 Half Loop with integrated roll K 3
AF-21.09 Horizontal Square with quarter roll, quarter circle with half roll integrated, two consecutive quarter rolls, quarter circle with half roll integrated, knife edge loop, quarter circle with half roll integrated, two consecutive quarter rolls, quarter circle with half roll integrated, quarter roll K 5
AF-21.10 Trombone with three quarter roll, half roll integrated, three quarter roll K 4
AF-21.11 Double Stall Turn with quarter roll, half roll integrated, quarter roll K 5
Total K = 47

Reason: F3P Aerobatic schedules change every two years.

ag) Annex 5M: F3P Description of Manoeuvres F3 Aero Subcommittee

Delete the existing manoeuvre descriptions of schedules AA-19, AP-19, and AF-19 and replace with descriptions of AA-21, AP-21and AF-21. Refer to Agenda ***Annex 7b.***

Reason: F3P Aerobatic schedules change every two years.

Class F3S – Radio Controlled Aerobatic Jet Model Aircraft

ah) 5.12.1 Definition – 5.12.12 Execution of Manoeuvres F3 Aero Subcommittee

Replace the text from 5.12.1 to 5.12.12. Refer to ***Annex 7c****.*

Reasons:

1. The current F3S texts refer to F3A texts. These specific text parts are integrated into F3S rules, now.
2. New technical developments and interests of pilots are integrated.

3. Some ambiguous parts are clarified.
4. Increasing interest in F3S in many countries.
5. Active pilots and judges were implemented into the development of the new and amended F3S Rules.

The F3 Aerobatics Subcommittee will kindly ask for early implementation.

ai) 5.12.13 Schedule of Manoeuvres F3 Aero Subcommittee

Delete current text 5.12.13, add new schedules F3S-Basic, F3S-Preliminary, F3S-Final, F3S-Freestyle:

5.12.13 Schedule of Manoeuvres

The schedule F3S-B is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-Schedules.

The schedule F3S-P is a preliminary schedule for expert pilots in Jet Aerobatic Power Model Aircraft competitions.

The schedule F3S-F is a finals schedule for expert pilots in Jet Aerobatic Power Model Aircraft competitions.

The schedule F3S-FS (Freestyle) is for competitors to demonstrate their artistic performances in Jet Aerobatic Power Model Aircraft in conjunction with music.

Basic Schedule SB-19 from 2019	K Factor
SB-19.01: Loop	3
SB-19.02: Knife-Edge Flight	4
SB-19.03: Reverse Cuban 8 with 1/2 roll, 1/2 roll	4
SB-19.04: Figure 9 with roll up	3
SB-19.05: 45° Upline with ½ roll	3
SB-19.06: Slow roll	4
SB-19.07: Square Loop	4

Preliminary Schedule SP-19 from 2019	K Factor
SP-19.01: Loop with roll integrated over top 90 degrees	4
SP-19.02: Half reverse Cuban 8 with ½ roll	2
SP-19.03: Knife-edge Flight	3
SP-19.04: Immelmann with ½ roll	2
SP-19.05: Reverse Cuban 8 from top with ½ roll, roll	4
SP-19.06: Half Loop	1
SP-19.07: Figure 9 with roll up	3
SP-19.08: Pull-push-pull Humpty Bump with ½ roll down	3
SP-19.09: 45° Upline with 3 consecutive ½ rolls	3
SP-19.10: Half Square Loop	2
SP-19.11: Slow roll	3
SP-19.12: Half Cuban 8 with ½ roll	2
SP-19.13: Square Loop with ½ roll, ½ roll	5

Final Schedule SF19 from 2019	**K Factor**
SF-19.01: Square Loop on corner with ½ roll, ½ roll, ½ roll, ½ roll	**5**
SF-19.02: Shark Fin with two consecutive ¼ rolls	**3**
SF-19.03: Knife-edge flight with roll	**4**
SF-19.04: Pushed Immelman with roll	**2**
SF-19.05: Rolling Loop	**5**
SF-19.06: Half Square Loop with ½ roll	**2**
SF-19.07: Figure 9 with with four consecutive ¼ rolls	**4**
SF-19.08: Pull-push-pull Humpty Bump with consecutive two ¼ rolls	**3**
SF-19.09: Avalanche	**4**
SF-19.10: Top Hat with two consecutive ¼ rolls, ½ roll	**3**
SF-19.11: Knife Edge Humpty Bump with ¼ roll, ¾ roll	**4**
SF-19.12: Half square loop on corner with half roll	**3**
SF-19.13: Reverse Nine with 3/4 roll, 3/4 roll	**3**
SF-19.14: Half reverse Cuban 8 with consecutive two ¼ rolls	**3**
SF-19.15: Roll Combination with four consective 1/8 rolls, four 1/8 rolls in opposite direction	**4**

For the description of the manoeuvres, judging notes, and Aresti diagrams, see Annex 5X.

For the Manoeuvre Execution Guide, see Annex 5B.

Reasons:

1. Three new schedules with different difficulty of manoeuvres were developed to give pilots the possibility to fly schedules adapted to their skills and to attract more competitors.
2. Freestyle with jet models is will attract spectators.
3. Schedules were tested at several competitions all over the world. Active pilots and judges were implemented into the development of the new schedules.

aj) Annex 5X: F3S – Description of Manoeuvres **F3 Aero Subcommittee**

Delete the existing manoeuvre descriptions and replace with descriptions of SB-19, SP-19 and SF-19. Refer to Agenda ***Annex 7d.***

Reason: Consequence of new F3S Schedule of Manoeuvres.

Volume F3 Helicopter begins overleaf