4.X. CLASS F2F – DIESEL PROFILE RACING MODEL AIRCRAFT

4.X.1. Definition of a Diesel Profile Racing Event

a) A Diesel Profile Racing event is a contest during which qualifying races are followed by a final race, in which three model aircraft participate simultaneously in each race, flying around the same circuit, each of them being entered by one team consisting of one pilot and one mechanic. In exceptional cases, a race may be run with only two teams.

b) No member of a team may be a member of another team. Only one member of each team may be an expert. A senior modeller is considered to be an expert if he/she has been placed once in the:
   - thirty first places of a Control Line World Championships class F2C (team-racing);
   - or twenty first places of a F2C Control Line World Cup;
   - or five first places of F2F Control Line World Cup.

   A junior is not considered to be an expert even if he/she is placed within the three criterias above.

c) A race is run over a set number of laps corresponding to the distance to be covered with landings for refuelling. The time taken by each model aircraft to cover that distance after the starting signal is registered.

d) The qualifying races are run over 100 laps corresponding to 10 kilometres. The final race is run over 200 laps corresponding to 20 km. Two pitstops (landings for refuelling) are mandatory for a qualifying race and five for a final race.

e) During the race the pilots remain in the centre of the circuit. Their only function is to control the model aircraft. The mechanics are placed outside the flight circle, as defined in paragraph 4.X.2. Their function is to start and adjust the motor and to refuel when the model aircraft is on the ground, and generally, to deal with the different operations that enable the model aircraft to race. The motor must be started by flicking the propeller by hand.

f) During a race, the mechanics must wear a safety helmet, with a chinstrap, strong enough to withstand the impact of a flying team racing model aircraft.

4.X.2. Diesel Profile Racing Site

A Diesel Profile Racing site must consist of two concentric circles which shall be marked on the ground:

a) Circle to be used by the mechanics: 19,6 m radius. This is called the flight circle, and is divided into six equal 60 degrees sectors. At each sector a starting and refuelling area, one meter in length, shall be marked on the outside of the flight circle and be known as the "pitting area".

b) Circle to be used by the pilots: radius 3 metres. This is called the centre circle. The centre of this circle shall be marked with a white spot of 0,3 m diameter.

4.X.3. Definition of a Diesel Profile Racing Model Aircraft

Model aircraft in which the propulsion energy is provided by a piston motor and in which lift is obtained by aerodynamic forces acting on the supporting surfaces which must remain fixed in flight except for control surfaces.

4.X.4. Characteristics of a Diesel Profile Racing Model Aircraft

a) The engine maximum swept volume of motor: 2,5 cm^3

b) Minimum total projected surface area (St): 12 dm^2

c) Total maximum weight: 700 g

d) Profile fuselage: minimum height: 100 mm; maximum width: 20 mm

e) The engine must be diesel type with suction feed. Propeller must be commercially available
   plastic/glass composite type; moulded carbon and/or fibre glass propeller is forbidden.

f) Minimum diameter of the wheel(s): 25 mm. The use of metal wheels is forbidden.

g) Maximum fuel permitted: 15 cm^3. Only one tank is allowed, to contain fuel and oil for lubrication.

h) The model aircraft must fly in the anti-clockwise direction.

i) The landing gear must be arranged to permit normal take-of and landing.

j) The model aircraft must remain in a correct state according to 4.X.4 (a) - (l) throughout the full race, otherwise it will be disqualified.

k) Fuel tank, tubing and any associated filling valves or shut-off units must be accessible and capable of being measured accurately in order to check the total capacity as a unit. If the organisers do not consider the system to be accessible or accurately measurable, then the team will be disqualified.

l) The model aircraft must be equipped with an effective engine-stopping device for enabling the pilot to terminate the engine run before the fuel tank is completely empty.

m) Rule B.3.1. of Section 4B does not apply to class F2F.

4.X.5. Controls - Technical Verification

a) Line Length: The radius of the flight circle is 15,92 m. It is measured from the axis of the control handle to the axis of the propeller.

b) Control System: Two control lines must be used. If constructed of single steel wire each, these must be of 0,30 mm minimum diameter with a minus tolerance of 0,011 mm allowed. If stranded line construction is used, these shall have a minimum of three strands and all strands shall be of equal diameter and the stranded combination shall have a minimum width of 0,34 mm with no minus tolerance allowed. In all cases the lines shall be measured using a suitable instrument with measuring surface diameters of 5 mm minimum and 8 mm maximum.
Before every race a load test shall be applied to the assembled control lines and the model aircraft in flying order equal to 30 times the gravity force, to a maximum of pull 140 N. The control handle must be built so that the distance between the axis of the handle and the points of flexibility of the two cables does not exceed 40 mm.
No intentional twisting and/or linking of the two lines together shall be permitted between the point of exit of the model aircraft and a point 300 mm from the handle. The use of flexible grouper(s) attached to the wing tip and extending a maximum of 2 cm is permitted.

c) Fuel Tanks: The fuel tank capacity is checked through the use of an accurate system by visual examination of the volume of the fuel put into the tank and pipes. Control is to be made before the contest and may be made after each race in addition to a verification after the final race.

4.X.6. Organisation of Races

a) Three competing teams (in exceptions only two) will fly simultaneously in each race after having been drawn for order. Qualifying races with less than three teams will be put at the end of the draw, in order to allow a three-team races with teams which have been granted an attempt.

b) The draw is organised in such a way that, when possible, only one team of any nation may participate in a qualifying race.

c) When it is not possible to organise a reflight for a team which has been granted an attempt, the F2F panel of judges will ask for volunteers to fill the race. The F2F panel of judges will organise an appropriate draw for the race among the volunteers and the team with the attempt. If there are no volunteers, the team will be allowed to fly alone to compete their reflight.

d) The teams may be allowed to run their motors just before entering the circle under the organiser's supervision so the running does not interfere with the starting procedure of a race. Mechanics are not allowed to walk with a running engine.

e) A pitting area (4.X.2.(a)) is occupied by each of the model aircraft which are to participate in a race. The model aircraft of the team designated first during the draw occupies the place chosen by that team. The other teams choose one of the remaining free pitting areas in order of the draw. The chosen pitting areas are considered occupied until the race is finished.
For the final race, the choice of the pitting areas shall be according to the results in the qualifying races. The team with the fastest time chooses first, the team with the second fastest time chooses next, etc. In case of a tie the teams' second fastest times in the qualifying races will decide the order of choice.

f) After entry to the circuit, it is forbidden to start a motor before the first signal has been given by the Circle Marshal, unless allowed by the Circle Marshal.

4.X.7. Race from Start to Finish

a) Two timekeepers are assigned to each team. They stand outside the flight circle, near the pitting area of the model aircraft that they control. They are in charge of the timekeeping and lap counting for their particular team.

b) A first signal given by the Circle Marshal authorises the mechanics to proceed with the warming up to the motor(s), during 90 seconds. A second

signal (visual and acoustic) announces the end of the warming up period and orders the mechanics to stop motors.

c) A period of 30 seconds is allowed for final preparations (filling up the tanks) and the Circle Marshal announces the last five seconds by reverse counting.

d) The starting signal is given by the Circle Marshal through a visual signal (flag) and a sound signal. For the last 3 seconds of the countdown and at the starting signal the mechanics must be standing erect close to their model aircraft and the pilots must be crouching on the border of the centre circle, with their control handles as close to the ground as defined by the F2F panel of judges. The starting signal must be "sharp" to enable accurate timing.

e) Model aircraft must fly at a normal height of between two and three metres, except for overtaking, taking off or landing.

f) Pilots must keep their controlling hand and the model aircraft on a plane perpendicular to a line joining their shoulders and passing through the centre line of their body, pilots must also keep their controlling hand on the vertical line between the middle of the chest and the top of the forehead, except when overtaking, taking off and landing when an exception of three laps is allowed.

g) Overtaking must be done by overflying. The model aircraft is not in any case allowed to fly over six metres height when overtaking. The pilot being overtaken must on no account carry out any manoeuvre to impede the overtaking competitor and must leave space for the overtaking pilot when the overtaking is finished.

h) The model aircraft is allowed to fly a maximum of two laps without the motor running.

i) Landings take place inside the flight circle.

j) The model aircraft must touch the ground with its motor stopped before the mechanic is allowed to catch it.

k) After the mechanic has caught the model aircraft, he must go to the nearest free pitting area from the point at which the model aircraft was stopped. A pitting area is occupied if a mechanic is standing at such an area, even if his team's model aircraft is still in the air.

l) After the mechanic has caught the model aircraft, but only then, the pilot is allowed to put one foot outside the centre circle.

m) During the refuelling and the restart of the motor, and until the time when he releases the model aircraft, the mechanic must keep the model aircraft in contact with the ground by at least one point and with the centre line outside the flight circle. During that time the pilot must be crouching or sitting inside the centre circle. He keeps his handle and his lines as close to the ground as defined by the F2F panel of judges until the model aircraft starts again.

n) The race ends when the number of laps completing the required distance has been covered by all the competing model aircraft or, when the official time limit has been reached, which is fixed at 10 minutes for a qualifying race or a semi-final race and at 15 minutes for the final race.

o) When the model aircraft has finished the race or when it cannot continue after a stop, its pilot must sit down or crouch outside the centre circle as long as the other competitors are still engaged in the race, unless the Circle Marshal allows him to leave the circle earlier.

4.X.8. Definition of an Official Flight

An official flight is recorded for every participant in any race not granted an attempt.

Attempts are granted as follows:

a) Any team in a qualifying race which has been interrupted through an obstruction or collision for which it was not responsible shall be granted an attempt.

b) In a final race which has been interrupted through an obstruction or collision before any of the participants has completed 100 laps the final shall be stopped and all competitors, except any who have at the point of stoppage of the race been disqualified, shall be granted an attempt.

c) If, before 50 laps of a qualifying race have been completed by any of the teams who started the race, only one team remains in the running and flying alone, the race will be declared void and considered an attempt for the remaining team. A team which has been granted an attempt is allowed to participate in another race.

4.X.9. Warnings - Eliminations

At each warning the chief judge shall notify the team manager concerned so that, in turn, he may convey the reason of the warning to the mechanic. In the event of any serious breach of the rules, the F2F panel of judges may eliminate the team from the race.

A TEAM SHALL BE WARNED:

a) If a pilot interferes with or obstructs another pilot either by his conduct in the circle (for example by raising the handle above his head during takeoff), or by a manoeuvre of his model aircraft preventing another model aircraft from flying or landing normally.
b) If a pilot, instead of walking around the centre, stands in the same place or walks backwards or continuously keeps the centre spot of the circle between him and the model aircraft.
c) If the pilot's flying style does not conform to 4.X.7.f).
d) If a pilot applies physical effort to increase the speed of his model aircraft during the official flight.
e) If the height level of the flight prescribed by the rules is exceeded.
f) If, during the start of the race or during the pit stops, the control handle, the lines and the model aircraft are not as close to the ground as defined by the F2F panel of judges may eliminate the team from the race.
g) If a mechanic services the model aircraft outside the designated pitting area.
h) If the pilot does not leave space for an overtaking pilot when the overtaking is finished.
i) For any other flagrant breach of the rules.

A TEAM SHALL BE ELIMINATED FROM A RACE

j) If the pilot steps outside the centre circle before the mechanic has taken hold of the landing model aircraft, and/or the pilot does not act in accordance with rule 4.X.7.i) and m).
k) If the mechanic steps into the flight circle with (with either foot), or reaches further than 0,5 m into the flight circle.
l) If the mechanic retrieves his model aircraft by any device.
m) If overtaking is done by passing under the slower model aircraft.
n) If the pilot whose model aircraft is to be overtaken carries out any manoeuvres to impede the overtaking competitor.
o) If a member of the team or the model aircraft causes a collision.
p) If jettisoning occurs or if the model aircraft is not in the condition as stated in 4.X.4.a). to i).
q) If the model aircraft flies more than two laps with the motor stopped.
r) If the model aircraft is recovered with the motor running or prior to touch down with the motor stopped.
s) If, after its model aircraft have been processed, the competing team has used parts or elements not checked during the control; if the team has modified its model aircraft(s) by changing the characteristics or specifications imposed by the rules this may lead to the application of penalties as stated in the General Section of the Sporting Code.
t) If the mechanic does not act according to 4.X.7.k) and l).
u) If the team has accumulated three warnable offences during the race.

4.X.10. Team Qualification and Classification

a) Each competing team must take part in at least one qualifying race to qualify for final race. The contests will be organised on two qualifying races and when it is decided by the organiser of the contest, on three.
b) The three teams having registered the three best times during qualifying races for the final race. When it is decided by the organiser of the contest, a specific final race could be organised for the three teams having registered the three best times during qualifying races with models powered by a steel piston/liner engine.
c) There is a tie between some teams when their best times in any single qualifying race are equal and also between their second best (and so forth in case of three flights). If there still exists a tie between some teams, a new qualifying race will be organised between these teams until an adequate number of teams is qualified for the final race. In that case, departure will be made by an individual draw.
d) This system for the elimination of ties will only be enforced if more than three teams qualify for the final race.
e) The competing teams which have participated in the final race will be placed at the head of the classification, only taking into account the times of flights during the final race.

The other teams will be classified according to their best time in qualifying races. Classification of any team that retired from any race or exceeded the official time limit for any race but was not disqualified, shall be ranked according to the number of laps completed.

If more than one team is disqualified in the final race, they are placed in the order of the number of laps completed. A disqualified team is always placed after any team that has retired without a disqualification.

Note : The F2F panel of judges decision must be communicated to the lap counters to ascertain the number of "legal" laps.

4.X.11. Judges and Timekeepers

a) The organisers must appoint a panel of at least three judges. The judges must have at least one language in common. Except under exceptional circumstances, the judges must be at least two nationalities and one of them minimum must be selected from the list of F2C judges proposed by the National Airsports Controls for their proficiency and experience and approved by the CIAM.

b) Two timekeepers, equipped with electronic stopwatches registering at least 1/100th second, with a timing limit of minimum of 15 minutes will be allotted to each team.

c) The time retained is the average of the two times, made up to the next upper 1/10th second. A maximum difference of 1 second is allowed between the two timekeepers. In case of a larger difference the concerned team will have the choice between average of the two times or a reflight.

4.X.12. Duties of the F2F panel of judges

a) The F2F panel of judges is responsible for observing the conduct of each team during the race. Teams will be informed of any offence by visual indicators. After a maximum of three offences a team will be eliminated from a race.

b) Warning and cancellation are notified to each team by means of three coloured lights:
   Green light - First warning (first offence).
   Amber light - Second warning (renewal of the first offence or a new one).
   Red light - Elimination (renewal of previous offences or a new one).

c) A time penalty of 5 seconds shall be given to a team starting the engine(s) during the countdown before the starting signal.