

ANNEX 7

TRIANGULATION METHOD

1 Tracking

All models in any event for which an achieved altitude figure is scored shall be tracked in flight be at least two (2) calibrated measuring devices which are situated on a measured baseline of at least three hundred (300) metres. The distance to the launch pad shall be a minimum of 2/3 (two thirds) of the current world record rounded to the nearest lower 100 metres. At world championships, a redundant tracking system shall be implemented with four measuring devices (Theodolites), two at each tracking station. The best tracking pair will be designated as the primary trackers and their data will be used first. If the primary trackers fail, the data from the secondary trackers will be used. If they fail, the combination of azimuth and elevation from each tracking station will be used. For models with engines over 20 Newton-seconds the base line must be a minimum of 450 metres. The distance from the launch site to the centre line of the base line must be 1/2 the base line length. The distance to the launch pad shall be at least 300 m for models with up to 2,5 Ns impulse. The launch site must be seen from the measuring devices.

2. Tracking Accuracy

The measuring devices must be able to measure angles in both the horizontal (azimuth) and vertical (elevation) axes and shall have a minimum accuracy of +/- 0,5 degrees in both azimuth and elevation.

3. Tracking Procedure

A model for which an achieved altitude figure is required will be tracked aloft visually by measuring device operators manning each tracking device until they see that the model has reached the maximum vertical altitude of its flight. The angle of azimuth from the baseline and the angle of elevation from the horizontal shall then be read to the nearest degree of arc and reported to the launching area. Angular data thus recovered from tracking will be reduced to altitude data by use of the principles of triangulation.

4. Computed Altitude

The computed altitude from each station's reduced altitude data must be within ten percent (10%) of the average altitude computed utilising data from both stations. Computed station altitudes not falling within 10% of the average computed altitude will result in a "no close" (NC) for the model. All altitudes will be rounded-off to the nearest metre before this "10% rule" is applied. The official scored altitude is the computed average altitude. A "Track Lost" (TL) is recorded where the trackers are unable to determine the position of the model sufficiently to obtain any angles. A zero is recorded if the flight path is erratic, unpredictable, malfunctions or the flight is disqualified for safety reasons. In the event of a "No Close" (NC) or a "Track Lost" (TL) for the model, the competitor may be allowed to fly again until the end of the round. The organiser is obliged to announce altitude calculations of each flight not more than ten minutes after the launch, to leave modellers whose flights are considered "No Close" (NC) or "Track Lost" (TL) enough time to make another flight in the same round. A safety disqualification or a model malfunction making the model difficult to track will result in a "zero" for the flight.

5. Visibility of Models

All models that are to be tracked for altitude shall disperse a coloured powder at ejection which will aid tracking. Theodolite operators may lose track of models which do not contain sufficient powder or contain powder which does not contrast well with the sky. The organiser will have tracking powder available for competitor's use.