**USE OF RADAR GUN FOR SETTING SKEET TARGETS**

**Background**

Associations that govern the rules of skeet have historically defined within their rules how targets should be set to achieve the highest degree of consistency in target presentation on a clearly defined field layout. The definitions include the line of the target (trajectory) specified in terms of its height (the hoop) its angle (the field measurements and specified angles) and the target speed, set based upon the distance that a target will fly **in still air.**

Both the CPSA and the American NSSA both specify within their rules that targets should be set to fly a measured distance (with a specified + or – tolerance ) and field specifications include the provision of a target distance marker.

In every instance it is stated that targets should be set in **still air.** This ideal, but rarely achievable condition was / is intended to ensure that targets are set to a consistent speed and that both traps on the field are presenting targets to competitors at the same or at least a very similar speed.

This use of distance that targets will travel is used in many disciplines as a means to define target speed and is not confined to skeet, the common purpose however, and one that dates back many years is an attempt to define a consistent target speed to ensure that the disciple can be reproduced on any field conforming to the measurements defined within the prevailing rules.

**Discussion**

It has been proposed that the use of modern technology (radar speed guns) could / should be used or allowed to enable the setting of skeet targets.

In recent years,’ dispensation was given although never incorporated into the rule book, for use of radar guns for setting of targets for a home international tournament, where the topography of the ground made it impossible to implement the use of meaningful target distance markers, (this issue is often present where fields are constructed on ground that is not sufficiently level over a sufficient distance for the markers to be meaningful).

It has been common practice for some time for this technology to be used in setting target speeds for international competition in various disciplines.

The Scottish Clay Target Shooting Association have published and used guidance on the use of radar guns for setting skeet targets. See the extract from the SCTA web site at the end of this document.

The American NSSA publish their guidance on the use of Radar guns for setting target speed.

**Some recent tests.**

In the knowledge that this topic was to be on the agenda for discussion by the **Skeet Sub Committee** some testing / experimentation has been undertaken at several different skeet fields / locations to assist in informing the discussion.

The equipment used in one instance is owned by the shooting ground owner (not a CPSA registered ground but throws a significant number of NSSA registered targets and as the ground is built into a slope making use of distance markers difficult). Another set was loaned to enable some wider comparative testing to be undertaken. Both sets of equipment were purchased by their owners for under £100 and can be readily found for purchase on eBay. Considerably more expensive equipment is available for purchase but the test guns used were found to provide sufficiently consistent results to make them a practical proposition for any club wishing to use them.

2 methods of measurement were found to provide very consistent and reproducible results under a variety of conditions, a third approach proved to be less consistent and would not be recommended.

The approach documented by the SCTA was found to be very consistent and when compared (in still air) to the distance marker approach was found to achieve the required result of delivering a target across the specified distance and at a very consistent speed. The one difficulty experienced with the SCTA approach is the speed is registered using the radar gun from a position behind the trap and pointing out through the window measuring the speed of the target as it leaves the arm. This is fine in the majority of cases but can prove difficult and potentially unsafe within some trap houses where space is limited and the position of the operator is compromised by the lack of space to work safely.

A second approach tested was based upon the approach documented by the NSSA. The speed measurement is taken from either station 1 or station 7 (high or low target) with the radar gun pointed at the hoop positioned at the target crossing point. Again, very consistent results were achieved although by comparison the speed readings recorded to achieve the same distance result are a little reduced to those specified by the SCTA. The speeds documented by the NSSA in their documentation were not considered as their rule on distance marker measurement differs a little to that of the CPSA.

The third approach, found to offer less consistent results involved standing at the target crossing point with the gun directed into the trap house window. We could not consistently reproduce results that were considered of sufficient quality or consistency to be considered useful using this approach.

**Advantages of using radar guns for speed setting of skeet targets.**

The current historical arrangement of setting target speed by measuring distance travelled is not only crude but the necessary prevailing conditions to make it relevant (still air and level ground over the requisite distance) are rarely available when required. Any significant head or tail wind will have an undue influence on target trajectory and distance, particularly as the target loses momentum and becomes increasingly vulnerable to air movement. Skeet targets are predominantly shot whilst under power and a consistent speed for both targets on the field is a desirable condition to be achieved for quality target presentation.

At Major competitions the members of the jury will be invited to witness the setting of the targets through the hoop to ensure that the line of the targets set is correct but the conditions are rarely conducive to the still air requirement for a valid view to be taken on target speed. Here is where some significant variation and inconsistency is brought into play. It is often the case that target speed will be increased or decreased to ensure the targets travel to the distance markers to conform to the current wording of the rules; ignoring however the intended still air condition for speed setting as this condition so often cannot be reproduced. There can be and often is a significant differential in target speed where the target from one trap is wind assisted in making the distance measurement while from the opposite end a dramatic increase in speed has been implemented in an attempt to make the target achieve the specified distance.

These inconsistent target speeds were never the intention of the original rules that specified the still air condition in an effort to achieve a consistent target speed. Unfortunately, due to the current wording of our rules an expectation has become common place that the targets must achieve the measured distance despite any prevailing conditions.

The acceptance of the use of radar guns and a re-wording of the rules to clarify the purpose of distance markers as a crude but effective means of setting target speed in ideal conditions will contribute to an improvement in target quality and consistency, a topic that is often the subject of controversy and complaint if only due to lack of understanding or miss interpretation of the intent behind the current rules.

Additionally, it would be a straightforward matter for the jury members expected to validate the target setting at major events to witness not only the trajectory of the targets but also their consistent speed despite any prevailing conditions.

**Recommendation**

The current technical rules governing skeet should be revised to both clarify the purpose of the existing wording in respect of target distance and trajectories with an additional statement that the still air condition specified is intended to enable some consistency of target speed setting. It should also be clarified through suitable wording that it is not the intention that prevailing wind conditions should be compensated to maintain the specified distances regardless of wind conditions.

The rules should also be revised to allow for the use of radar guns to set target speed more accurately under a wider variety of prevailing conditions than the current requirement for still air allows. Where radar guns are to be used appropriate guidance for their use should be appended to and published with the technical rules.

For major competions the use of radar guns for setting target speed in accordance with published guidance should be specified as desirable if not mandatory with the jury expected to validate target speed in addition to trajectory.

**Extract from SCTA web site**

TARGET MEASUREMENTS

Target Consistency

**CLAY TARGET MEASUREMENT**

Consistency of targets for the various clay disciplines relates to the most common complaint from shooters to ground owners regarding the target distance, target angles or the speed of their clay targets, are not correct.

These comments general relate to the Trap and Skeet disciplines that have documented target angles and distance set for each discipline, which all shooting grounds should be following

From the shooters prospective they pay their money in expectation of quality targets at all venues. Therefore shooting grounds that provide the targets, in the discipline format that the shooter requires, should therefore be committed to provide a standard quality off targets and a service that shooters expect

I have proposed to the board and the ground owners at the recent ground forum meeting held on the 11th December the following action that has been agreed and passed by both parties.

To establish a set method off standardising target measurements for all grounds to adopt, and all ground owners are committed to provide to the shooters, irrespective what ground they may attend the consistency of targets for each discipline is the same

The fundamental problem most grounds have especially for the Skeet and Trap disciplines relates to the background or uneven ground levels that correct target distance cannot be physically measured.

The measurement of target uniformity and consistency can be established by recording the flight speed of the target in relation to the required target distance.

A Guide to Target Distance and Target Speed

Discipline Discipline Target Distance Approximate Target Speed

Olympic Trap                        76m +/- 1m           (83yd +/- 1yd)

Double Trap                          55m +/- 1m           (60yd +/- 1yd)

ABT Trap                                75m +/- 1m           (82yd +/-1yd)                       (56mph +/-1pmh)

DTL                                         45.72m to 50.3m (50yd to 55yd)                      (42mph +/-1mph)

Olympic Skeet                      65m to 67m          (71yd to 73yd)                      (High 53mph Low 54mph +/- 1mph)

National Skeet                      50m to 52m          (54.7yd to 56.9yd)               (High 43mph Low 44mph +/- 1mph)

Trap discipline measurements taken from Front of Trap House.

Skeet discipline measurements taken from Exit window of High and Low House

Three shooting grounds have been independently checked by board members, confirming compliance with the correct target distance for the Trap and Skeet disciplines the speed measured related to the guide details.

From 1st April 2012 the Standard practice for grounds is a target as set out in the discipline rules.

The three grounds checked by the board, already use a Speed Gun as a target measurement set up tool.

Bill Jones