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## TECHNICAL INFORMATION

### Blood Spatter Kit Catalog No. BSK500

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#### INTRODUCTION

Blood spatter interpretation has evolved into an extremely valuable tool in crime scene reconstruction. Blood spatters follow somewhat predictable patterns when the droplets travel a distance. The purpose of the Blood Spatter Kit is to provide a means of plotting the origin of the blood. This is accomplished through string trajectory—by placing strings from the impact surface back to a likely point of origin, the probable path of the blood droplets can be interpreted.

The BSK500 Blood Spatter Kit contains the following tools for the purpose of blood spatter analysis: four brightly colored spools of twisted nylon twine (green, pink, orange and yellow); removable and reusable wax clips to anchor the strings; Blood Stain/Evidence Templates for photographing spatter evidence; and one pair of scissors.

#### BLOOD STAIN INTERPRETATION

This involves reconstructing the events that must have happened to produce the bleeding. This is not something that many law enforcement officials can do—it



usually requires a specialist.

The first step when dealing with blood in any aspect of forensics/criminalistics is to know the characterization of bloodstains. Once it has been determined that the blood is human, its pattern can be discerned. Do not discount the location, manner in which it was spattered, and its appearance—these can be extremely useful facts in determining origin.

The specialist will try to determine what the position and shape indicate. Measurements are taken to determine the trajectory as well as to execute carefully controlled experiments. These experiments utilize surface materials identical to those found at the crime scene.

Herbert Leon MacDonell, a leading authority on bloodstain interpretation, lead the way with his interpretations of blood spatter analysis. In his published study, he provides the following tips for investigators faced with blood spatter evidence at the crime scene:

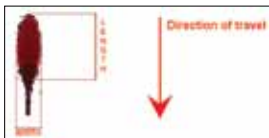


FIGURE 3

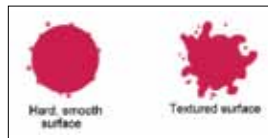


FIGURE 3A

- It is possible to determine the impact angle of blood on a flat surface by measuring the degree of circular distortion of the stain. In other words, the shape of the stain tends to change depending upon the angle of impact that caused the stain. For example, the more the angle decreases, the more the stain is less circular and longer (Fig. 3).
- Surface texture is one of the key components in determining spatter type. This means that the harder the surface is the less spatter will result. It is therefore extremely important to duplicate the surface in a controlled test (Fig. 3A).
- When a droplet of blood hits a surface that is hard as

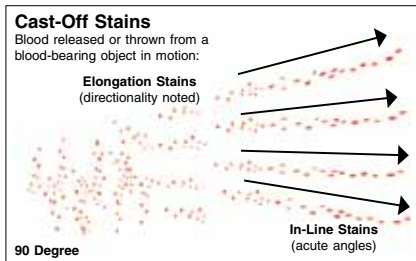


FIGURE 3B



FIGURE 1—No. BST1 Blood Stain/Evidence Template

well as smooth, the blood usually breaks apart upon impact. This in turn causes smaller droplets. The smaller droplets will continue to move in the same direction as the original droplet. Fig. 3B shows the spatter created by cast-off stains.

### PLOTTING BLOOD SPATTER TRAVEL

The BSK500 contains various colored strings with which an attempt to replicate the actual trajectory of the blood droplets can be accomplished. The procedure for setting the strings in this simulated crime scene is as follows:

- Using the No. BST1 Blood Spatter Templates provided, photograph all blood spatters at a distance and close-up as shown in Fig. 1.
- Examine the spatter to determine if the blood was deposited on the surface at an angle of  $90^\circ$ . If this is the case, it may be assumed that the blood traveled in a straight line from the victim to the surface. Blood creating a pattern similar to Fig. 2 indicates straight-line travel. No further plotting is needed if this is apparent.
- If the blood exhibits elongated spatter as depicted in Fig. 3, then the droplet(s) apparently struck the surface at an angle. To determine the angle of impact requires the use of rather complex trigonometric calculations. Experienced Blood Spatter Criminologists are trained in this type of calculation. For our purposes, we will *approximate* the angle of impact. As indicated above, a blood droplet striking the surface at an angle creates an elongated stain that is no longer circular. The stain will narrow—sometimes coming to a point. The longer the stain...the lesser the angle of impact.
- To plot the spatter travel, it will be necessary to mount individual strings to the surface. First, place one of the provided wax clips to the surface adjacent to the stain. Next, attach the end of one of the colored strings to the clip as illustrated in Fig. 4. The string should be drawn tight in

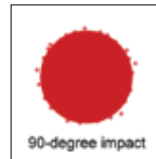


FIGURE 2



FIGURE 4

the approximate angle of *presumed* travel. Do not cut the string at this time. Instead, tie it temporarily to a vertical support such as a photographic tripod, for example.

5. Move to a second stain and repeat Step 4 using string of a different color and attempt to approximate the angle of impact. This string should bisect the first string at some point. It may now be necessary to move the string support device closer or farther away from the stains.
6. Next, place a third string of a different color in the same manner as described above. Additional strings may be placed if there are a number of stains all showing an angle of impact less than 90°.
7. Once the majority of angular stains have been plotted, photograph the string matrix from several different angles (Fig. 5).

*CONCLUSION: It is apparent, from this example, that the victim was in a crouched or kneeling position when attacked.*

## REPLENISHMENT OF SUPPLIES

*NOTE: Strings of the various colors and wax clips may be ordered from the SIRCHIE Sales Department by calling: 1-800-356-7311.*

### How to Replace Kit String

1. Remove the two (2) brass thumb-nuts that secure the plastic cover containing the spent string spool.
2. Lift the plastic cover and remove the empty spool.
3. Place the new spool of string in the plastic cover and reinsert it in the kit.
4. Re-secure with the two thumb-nuts removed previously.



FIGURE 5

#### BSK500 CONTENTS:

- 1- BST1 Blood Stain/Evidence Template, 15 pk.
- 1- KCP110 Scissors, 5" (12.7cm)
- 1- KCP261 Green Twisted Nylon Twine, 18 gauge x 275 ft. (84m)
- 1- KCP262 Pink Twisted Nylon Twine, 18 gauge x 275 ft. (84m)
- 1- KCP263 Orange Twisted Nylon Twine, 18 gauge x 275 ft. (84m)
- 1- KCP264 Yellow Twisted Nylon Twine, 18 gauge x 275 ft. (84m)
- 1- KCP265 Wax Clips, 10 ea.
- 1- BSK500C Black Molded Carrying Case; Dimensions: 14" x 10.25" x 3.5" (35.6cm x 26cm x 8.9cm); Weight: 3.3 lbs. (1.5kg)