APPENDIX B – REFERENCES

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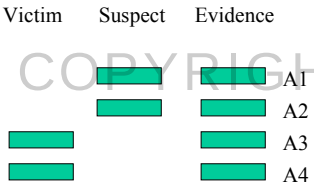
APPENDIX C – TRADITIONAL LIKELIHOOD RATIO CALCULATION FORMULAS

The following formulas address the question what is the likelihood that the suspect left the DNA that is different from the victim and/or the likelihood that the suspect is a co-contributor of the genetic material identified on the item of evidence. These formulas may also be used to answer the converse question what is the likelihood that the victim left the DNA different from the suspect. However, the appropriate alleles must be plugged into the formulas to obtain this information.

C1 and C2 columns below refer to columns found in the Popstats software and refer to the numerator and denominator, respectively.

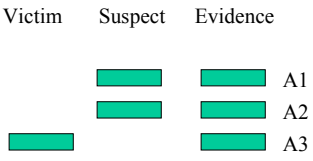
1.



$LR = 1/ 2P_1P_2$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - enter alleles A1 & A2

2.



$LR = 1/ 2P_1P_2$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - enter alleles A1 & A2

3.

$LR = 1/P_1^2 + 2P_1P_2 + 2P_1P_3$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - enter allele A1

4.

$LR = 1/P_1^2 + 2P_1P_2 + P_2^2$

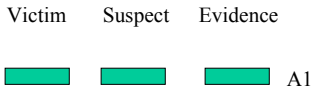
C1 column 0 unknown - leave field blank
C2 column 1 unknown - leave field blank

5.

$LR = 1/P_1^2 + 2P_1P_2 + P_2^2$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - leave field blank

6.



$LR = 1/P_1^2$

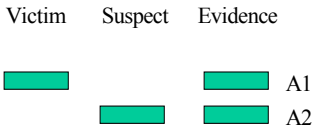
C1 column 0 unknown - leave field blank
C2 column 1 unknown - leave field blank

7.

$$LR = 1/2P_1P_2 + P_2^2$$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - enter allele A2

8.



$$LR = 1/2P_1P_2 + P_2^2$$

C1 column 0 unknown - leave field blank
C2 column 1 unknown - enter allele A2

The formulas provided above were obtained from Ian W. Evett and Bruce S Weir's 1998 book, Interpreting DNA Evidence. These are general formula that cover most of the cases that are handled on a day-to-day basis by the Virginia Department of Forensic Science. However, depending on the scenario of the case other likelihood ratio formulas not listed above may need to be used.