# Yes, No, Maybe So - TRACE EVIDENCE CONCLUSIONS

Under ISO/IEC 17025:2005(E) Section 5.10 Reporting the results – 5.10.1 states that "The results of each test, calibration, or series of tests or calibrations carried out by the laboratory shall be reported accurately, clearly, unambiguously and objectively, and in accordance with any specific instructions in the test or calibration methods."
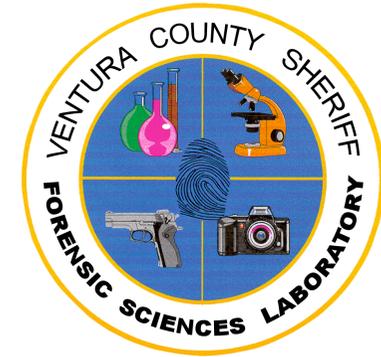
In the absence of statistics, a scale allows for conclusions that express the level of certainty.
HOWEVER
Multiple Conclusion Scales = CONFUSION

Scientific Working Group on Shoeprint and Tire Tread Evidence (SWGTREAD)

SWGTREAD's Standard Terminology for Expressing Conclusions of Forensic Footwear and Tire Impression Examinations

http://www.theiai.org/guidelines/swgtread/index.php

A. **Identification (definite conclusion of identity)** – this is the highest degree of association expressed in footwear and tire impression examinations. This opinion means that the particular shoe or tire made the impression to the exclusion of all other shoes or tires.

B. **Probably made (very high degree of association)** – this opinion means that the evidence is very persuasive that the shoe or tire made the impression, yet some critical feature or quality is lacking and/or missing so that an identification is not in order.

C. **Could have made (significant association of multiple class characteristics)** – this opinion means that the design and physical size correspond, and there may also be some correspondence of the general condition of wear.

D. **Inconclusive (limited association of some characteristics)** – this opinion means some similarities are noted; however, there are significant limiting factors in the questioned impression that do not permit a specific association between the questioned impression and the known shoe or tire.

E. **Probably did not make (very high degree of non-association)** – this opinion means that the evidence is very persuasive that the shoe or tire did not make the impression, but the impression lacks sufficient quality or clarity for an elimination.

F. **Elimination (definite exclusion)** – this is the highest degree of non association expressed in footwear and tire impression examinations. This opinion means that the particular shoe or tire did not make the impression.

G. **Unsuitable (lacks sufficient detail for a meaningful comparison)** – this opinion means that insufficient detail was present in the questioned impression to enable any meaningful comparison with any known shoe or tire.

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Section 16
Best Practices for Forensic Photographic Comparison

Levels of Findings
In those cases where a statistical basis for decision making exists, the level of finding should reflect the appropriate probability. The underlying assumptions, particularly simplifying assumptions, for the statistical model should be reported.

In those cases without a statistical basis, a clear indication of the strength of the conclusion should be given; this will necessarily be a descriptive statement and not a numerical probability. Most agencies employ a scale of reporting with a certain identification at one end, certain elimination at the other, no conclusion in the middle, and some number of intermediate steps. In addition, there may be some indication of the suitability of the sample for comparison, particularly if it precludes a finding.

As illustration, three scales currently used by agencies are given below:

Continuum of Conclusions Examples For Photographic Comparative Analysis			
Identification	Identification	Identification	Identification
			Powerful support same
	Similar		
		Similarities noted	Strong support same
No conclusion	No conclusion, but with similarities		Moderate support same
			Limited support same
		Neither/Nor – with explanation	Inconclusive
	No conclusion		Limited support different
			Moderate support different
	No conclusion, but with dissimilarities		Strong support different
	Dissimilar		Powerful support different
Elimination	Elimination	Elimination	Elimination
	No comparison Possible	Not suitable – with explanation	No comparison Possible

6 Best Practices for Forensic Photographic Comparison

SWGGUN
Scientific Working Group for Firearms and Toolmarks

Association of Firearm and Tool Mark Examiners (AFTE)

"Range of Conclusions Possible When Comparing Toolmarks"

Appendix 1

AFTE Glossary – Range of Conclusions Possible When Comparing Toolmarks

1. IDENTIFICATIONS – Agreement of a combination of individual characteristics and all discernible class characteristics where the extent of agreement exceeds that which can occur in the comparison of toolmarks made by different tools and is consistent with the agreement demonstrated by toolmarks known to have been produced by the same tool.

2. INCONCLUSIVE –

   A. Some agreement of individual characteristics and all discernible class characteristics, but insufficient for an identification.
   B. Agreement of all discernible class characteristics without agreement or disagreement of individual characteristics due to an absence, insufficiency, or lack of reproducibility.
   C. Agreement of all discernable class characteristics and disagreement of individual characteristics, but insufficient for an elimination.

3. ELIMINATION – Significant disagreement of discernible class characteristics and/or individual characteristics.

4. UNSUITABLE – Unsuitable for microscopic examination.

ENFSI   **Working Group Marks**

HARMONISED CONCLUSION SCALE OF THE ENFSI WG MARKS

Level	Likelihood Ratio (partial Bayes' rule)	Probability (full Bayes' rule)
1	Identification	Identification
2	Very strong support for proposition A / Strong support for proposition A	Very probably
3	Moderately strong support for proposition A / Moderate support for proposition A / Limited support for proposition A	Probably
4	Inconclusive	Inconclusive
5	Limited support for proposition ⊕ (⊕ = NotA) / Moderate support for proposition ⊕ / Moderately strong support for proposition ⊕ / Strong support for proposition ⊕ / Very strong support for proposition ⊕	Likely not
6	Elimination	Elimination

(A) = hypothesis: the questioned tool produced the mark;
(NotA) = alternative-hypothesis: the questioned tool didn't produce the mark.
(here assumed: even prior odds)

Which Scale Best Allows Results to be Reported "Accurately, Clearly, Unambiguously and Objectively?"