AFFIDAVIT OF JOHN I. THORNTON

STATE OF CALIFORNIA)
)
COUNTY OF NAPA)

BEFORE ME, the undersigned authority, on this day personally appeared the undersigned affiant, John I. Thornton, being by me first duly sworn upon his oath, did state and depose as follows:

1. My name is JOHN I. THORNTON. I am over 21 years of age, of sound mind, capable of making this Affidavit, and fully competent to testify to the matters stated herein. I have been engaged in this case to give my professional opinion on the defense of Mark Crawford in *United States v. Crawford* in relation to the physical evidence presented by the government at trial concerning the death of George Nicolas Brueggen.

2. I have been a forensic scientist for 44 years. My CV is attached, as is a list of court appearances for the past several years. I have a Doctorate in forensic science from the University of California at Berkeley. I have worked in operational crime laboratories for over twenty years, and I retired as an Emeritus Professor of Forensic Science from the University of California. I have taught physical evidence methods in China, Israel, Colombia, Mexico, India, and Spain. I have published approximately 185 works, including one standard textbook on physical evidence methods, chapters in half a dozen other textbooks, with the remainder being principally journal articles in the forensic science literature, but with some articles in the chemistry literature and some in the law literature. Of particular relevance to the present case, I am the author of the following:

J. Thornton, *Forensic Paint Examination*, Chapter 8 in *Forensic Science Handbook*, Volume 1, 2nd Edition, R. Saferstein, ed., Prentice Hall, Upper Saddle River, NJ, 2002

D. Stoney and J. Thornton, A Critical Analysis of Quantitative Fingerprint Individuality, *J. Forensic Sciences*, Vol. 31, No. 4, October 1986, pp. 1187-1216.

3. At the request of the law office of Thomas J. Henry, I have reviewed the trial testimony of those witnesses describing the nature of the physical evidence associated with the case of U.S. v. Mark Crawford, United States District Court for the Eastern District of California, Fresno Division. I have also reviewed the report of the autopsy performed on George Brueggen.

4. I am harshly critical of the manner in which physical evidence issues pertaining to the death of George Brueggen were dealt with by the defense at the time of the 1999 trial of Mark Crawford and others. My comments will follow four separate aspects of the physical evidence: (1) fingerprints, (2) paint, (3) cause of death and toxicological issues, and (4) duct tape evidence.

Fingerprints

At the 1999 trial of Mark Crawford, Oscar Kizzee, a Texas Department of Public Safety fingerprint analyst, testified to the identification of a fingerprint found on duct tape under a Jobox construction site toolbox as having been made by a finger of Mr. Crawford. Mr. Kizzee was not asked to specify the finger, nor was he asked to provide the number of matching characteristics that he claimed in his comparison. He testified that in his normal practice, he would be satisfied with seven matching characteristics, and that in the Crawford matter, he had found "at least" seven characteristics. He testified further that his understanding of the FBI criteria for identification was that the FBI would accept seven matching characteristics "or less."

This testimony could have been challenged at the time of the 1999 trial, and could have been challenged effectively. The FBI has <u>never</u> claimed that seven characteristics would constitute an adequate match, and certainly has never stooped to "seven or less." In my opinion, this

testimony transcends the threshold of the absurd. I am particularly familiar with the extant literature on the subject, and I have never seen a published account of seven matching characteristics offered as a satisfactory threshold of identification in any part of the world. In the early 1970's, the Army Crime Laboratory in Ft. Gordon, GA, was circulating fingerprints of two different people with nine matching characteristics. A cogent cross-examination of Mr. Kizzee at the time of the 1999 trial would have revealed that his criteria for identification was totally devoid of a basis in the science of fingerprint, and was defective in the extreme. No person claiming an identification threshold of seven characteristics could aspire to the fingerprint analyst certification offered by the International Association for Identification. My comment in regards to certification would have been just as applicable in 1999 as it is in 2006.

Paint

At the 1999 trial of Mark, Crawford, Donald Thain, a Texas Department of Public Safety trace evidence analyst, testified to the similarity of paint found with the body of George Brueggen and paint on a Jobox construction site toolbox. Mr. Thain's methodology include a color comparison, solubility, and pyrolysis-gas chromatography. His methodology could have been challenged at the time of trial. He testified that the evidence and exemplar paints were of the same chemical type, but he did not volunteer what that type was, nor was he asked on direct or cross-examination. He apparently did not conduct an infrared spectroscopic examination, which is the definitive test for determining the type of polymer constituting a paint binder. Pyrolysis and gas chromatography is a potentially powerful approach to paint analysis, but it has its detractors. Standardization and reproducibility have proven difficult. And from the standpoint of interpretation, what was not elicited nor determined at the time of trial was whether the paint was a prosaic paint used in common industrial, manufacturing, or architectural situations. In my view, the defense was remiss in not reviewing Mr. Thain's bench notes, i.e., the raw data and contemporaneous notes taken during the actual analysis. If this had been done, the significance of his findings could have been related to the incident. Stated differently, a thorough scrutiny of Mr. Thain's work could have provided meaningful information as to what the evidence meant, rather than limited to what the evidence was. Mr. Thain was not cross-examined on any aspect of his analysis, which in my opinion was a serious defect in the consideration of this evidence.

Cause of Death and Toxicological Issues

An autopsy of the body of George Brueggen was performed by Lloyd White, M.D., on June 4, 1996. The autopsy is a scant page and a half, and does not suggest a cause of death. Dr. White issued a separate, undated page of "findings," in which he advances the opinion that carbon monoxide intoxication was "most probably" the cause of death. In coming to this opinion, Dr. White clearly indicates that he was not basing his opinion on any factors derived from his postmortem examination, but that he was influenced by "investigations of the circumstances surrounding [Brueggen's] death." In my review of this matter, I am unable to find any intrinsic verification of carbon monoxide poisoning. In my opinion, the failure of the defense to press this issue at the time of the 1999 trial was a serious defect in the overall terrain of relevant physical evidence. We are left with what is essentially a surmise when a defensible scientific determination could have been achieved.

Carbon monoxide may be detected in blood and bodily tissues for some considerable time after death. Carbon monoxide binds to hemoglobin in blood some 200 to 400 times more readily than does oxygen, and persists in the bound form called carboxyhemoglobin. The classic two volume work on Toxicology by Stewart and Stolman states the following:

> Since the carbon monoxide is eliminated from the body through the lungs, no elimination will take place unless there is active respiration. *The carboxyhemoglobin is very stable and is hardly affected by putrefaction.* . . Gettler and Friemuth showed that no carbon monoxide is absorbed post mortem and consequently the analysis of the blood, *even long after death*, gives an accurate index of its carbon monoxide content at the time of

death. (italics added). C.P. Stewart and A. Stolman, *Toxicology*, Academic Press, New York, 1961, Vol. II, pg. 790.

Nor was the issue of insulin overdose pursued by the defense at the time of the 1999 trial of Mr. Crawford. No toxicology analysis was apparently performed on samples taken from Mr. Brueggen at autopsy. No analysis for carbon monoxide was performed, and no analysis for insulin. Identification of insulin in postmortem samples was treated in some detail in the following:

Heyndrickx, C. Van Peteghem, M. Van den Heede et al. Insulin murders: Isolation and identification by radio-immunoassay after several months of inhumation. In *Forensic Toxicology*, J.S. Oliver, ed., Croom Helm, London, 1979, pp. 48-57.

A number of other citations to homicidal injection of insulin and its subsequent identification in postmortem remains are given in R. Baselt, *Disposition of Toxic Drugs and Chemicals in Man*, 5th Edition, Chemical Toxicology Institute, Foster City, CA, 2000, p. 443. Many of these citations date to the early 1980's, and would have been available to the defense at the time of the 1999 trial.

Duct Tape

Several different types of duct tape were collected as evidence from the Jacoby Lane scene. The defense treatment of the various types was, in my opinion, desultory and essentially aimless. All of the tape samples could have been characterized in a systematic fashion, but there seemed no interest on the part of the defense to do so. Patricia Graham, the Texas Department of Public Safety criminalist who testified concerning the duct tape, was not cross examined to determine if her examination was in consonance with established procedures for forensic duct tape examination. In my opinion, her examination was deficient with respect to the expectation of meaningful information which may be derived from duct tape evidence. For the epoch relevant to the 1999 trial of Mark Crawford, these procedures were discussed in detail in:

J. Smith, The Forensic Value of Duct Tape Comparisons, *Midwestern Assoc. of Forensic Science*, Vol. 27, No. 1, January 1998.

In 1998 there were six manufacturers of duct tape in the United States: Tesa Tape, Continental, Shufford, Polychem dba Kendall Grace, Permacell, and Nashua. All together there were 52 different tapes, most all of which could be distinguished by means of scrim count, thickness, tape width, adhesive color, energy dispersive x-ray analysis, Fourier transform infrared spectrophotometry, fill yarn diameter, fill yarn shape, warp yarn diameter, warp yarn delustering. The Fourier transform infrared spectrophotometric analysis would have definitively identified the various duct tape adhesive components, such as polyterpene resins (tackifiers), isoprene rubber, synthetic polyterpene resins, aluminum silicate and titanium dioxide. The same technique could have been applied to the analysis of the paint in this case as well.

John I. Thornton

SUBSCRIBED AND SWORN TO BEFORE ME, by the said John I. Thornton, on the 17 day of August 2006 to certify which witness my hand and seal.

Notary Public, State of California

JAMIE ZERBA
COMM. # 1610193
NOTARY PUBLIC – CALIFORNIA
NAPA COUNTY
My Comm. Expires SEP 30, 2008