

Steven M. Abrams, Esq.  
Attorney at Law  
Post Office Box 305  
Sullivans Island, SC 29482-0305  
(843) 216-1100  
steve@abramscyberlaw.com

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## Summary Expert Opinion

I have reviewed the following:

- Expert Statements #1A, #1B, #5, #7 by Dr. Keshava Munegowda, dated 10/12/20
- Expert corroborations for Expert Statement #1B from Mr. Samuel Plainfield and Mr. Dylan Sperber
- Expert corroboration for Expert Statement #7 from Mr. Steven Burgess
- The letter entitled, "The Importance of Forensic Images" from Mr. Steven Alexander
- The following trial transcript excerpts:
  - 4872-4881, FBI testifies images created in 2005
  - 4973, Media card was accessed by unknown person
  - 4962-4967, Exhibit 524 delivery date
  - 4973, File system changed while in FBI custody on 9/19/2018
  - 4968-4972, Proof that write blocker was not used and file system data was altered while in FBI custody
  - 4967, Media card arrives to forensics lab on 2/22/19
  - 4905, Unsealed evidence part 1
  - 4889, Unsealed evidence part 2
  - 4886, Unsealed evidence part 3
  - 4977, FBI says EXIF data not easy to change
  - 5371, Prosecution says photos taken exactly when folder stated
  - 4940-4941, FBI testifies file creation dates not reliable
  - 5373-5375, Racketeering 4 Prosecution Closing Statement

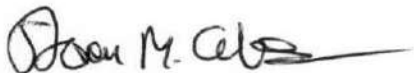
Based on my review and assuming that the data that has been presented to me is true, I conclude the following:

- I consider the improper access of the media card while it was in the custody of the FBI (referenced in the above documents) on 9/19/18, prior to its receipt into evidence and subsequent forensic analysis, as a type of tampering that irretrievably interrupted and invalidated the chain of custody over that digital photo evidence and overwrote crucial evidence on the media thus tampering with and destroying possibly exculpatory evidence.
- Because there is no way of knowing the accuracy of the computer system clock on the computer that copied the digital photos in this case, the dates and times associated with those digital photos cannot be relied upon or assumed to be accurate, especially given the other inconsistencies noted in the metadata from the digital photo evidence.

- Based on the testimony that I read, FBI Examiner Booth misstated basic facts about the inherent reliability of EXIF data on JPEG photos, specifically and incorrectly stating that the dates in the EXIF header were difficult to modify, and should be assumed to be reliable. In fact, EXIF header data is easily modified by several popular JPEG editing tools that are available for free on the Internet. It is my opinion that in making his statement, Examiner Booth either purposely misled the fact finders or simply is not sufficiently knowledgeable about the facts to which he testified. The former would be perjury. If the latter is true, that may be considered perjury by omission, as he projected that knew more about the subject than he did.
- I believe based on what I read that the statements made by the prosecution regarding EXIF data were made to purposefully mislead the jury about the reliability of the digital photo evidence in question.
- I can think of no way other than tampering to create the effect observed in Expert Statement #5. Therefore, I concur with Dr. Munegowda's conclusion.
- After reviewing Expert Statement #1A and #1B, I agree that the most plausible explanation is that the dates of the 94 pictures referenced were manually altered.
- Furthermore, I also agree the pattern of tampering in this effect does seem to generally conform to a Daylight Savings Time pattern (but not consistently), so it is possible the intent of the tamperer may have been to introduce this time zone conversion effect for the appearance of authenticity.

In conclusion, it is my expert opinion that the digital photo evidence, based on the abovementioned materials I reviewed, was tampered with and should have been excluded as unreliable, and should not have been used to support any charges. Further, based on my reviews of the above mentioned materials it appears that the government, in contradicting the testimony of their own expert witness, was intentionally dishonest about the reliability of said digital photo evidence in its closing statement to the jury. This would leave the jury with a misperception about the reliability of crucial evidence they were about to begin deliberating.

My CV can be found in Exhibit A.



Steven M. Abrams

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