

# **CREATIVE FORENSIC SERVICES**



## **AUDIO and VIDEO EXPERTS**

### **FORENSIC AUDIO REPORT**

CLIENT

SHARI NOLAN

DOCKET # CC 789691

**Forensic Analysis of Audio Recording**  
**CDR ID: PO73310892**

October 5, 2009

I have been retained by Shari Nolan to provide expert forensic audio analysis services. Attached to this report is a list of cases that I have worked on or provided expert testimony in the last five years.

- 1) § STATE OF MAINE v. DANIEL ROBERTS [Docket No. AND-07-455]
- 2) § STATE OF IDAHO v. SARAH JOHNSON [Docket No. 33312]
- 3) § STATE OF MAINE v. SARAH ALLEN [Docket No. 292 A.2d 167]
- 4) § UNITED STATES v. SANDOKO BRANDON [Docket No. CR-02-193]
- 5) § VALDA JOHNSON v. DAVID HOLWAY [Civil Action No. 03-2513 (ESH)]
- 6) § STATE OF MAINE v. DANIEL POULIN [Docket No. CR-08-50-B-W]
- 7) § STATE OF W. VIRGINIA v. ORLANDO DAILEY [Docket No. 06-4052]
- 8) § STATE OF ALASKA – JIM CRANE v. LOGAN CRANE [Docket No. 3AN-96-7547 CI]
- 9) § STATE OF MAINE v. DANA RICHARDSON [Docket No. 2006-0770, 2006-0781]
- 10) § STATE OF IOWA v. ROSCHELL LLOYD
- 11) § STATE OF MASSACHUSETTS v. MARK FOSTER
- 12) § UNITED STATES v. RICARDO CORDOBA-RAMIREZ
- 13) § STATE OF NEW HAMPSHIRE v. TRAVIS MAIERS
- 14) § STATE OF COLORADO v. RYAN LACKEY

### **Introduction**

My name is Arlo E. West. I am the President and owner of a Forensic Audio and Video laboratory located in Lewiston, Maine. I am a certified Forensic Audio and Video Expert. I received my certification from The New York Institute of Forensic Audio. I am a member of the Audio Engineering Society, American College of Forensic Examiners and a staff member of the Police Policy Studies Council.

Arlo E. West [ACFE, AES, PPSC]  
President CEO  
Creative Forensic Services, LLC  
5 Jeannette Avenue.  
Lewiston, Maine 04240

### **Nature of Retention**

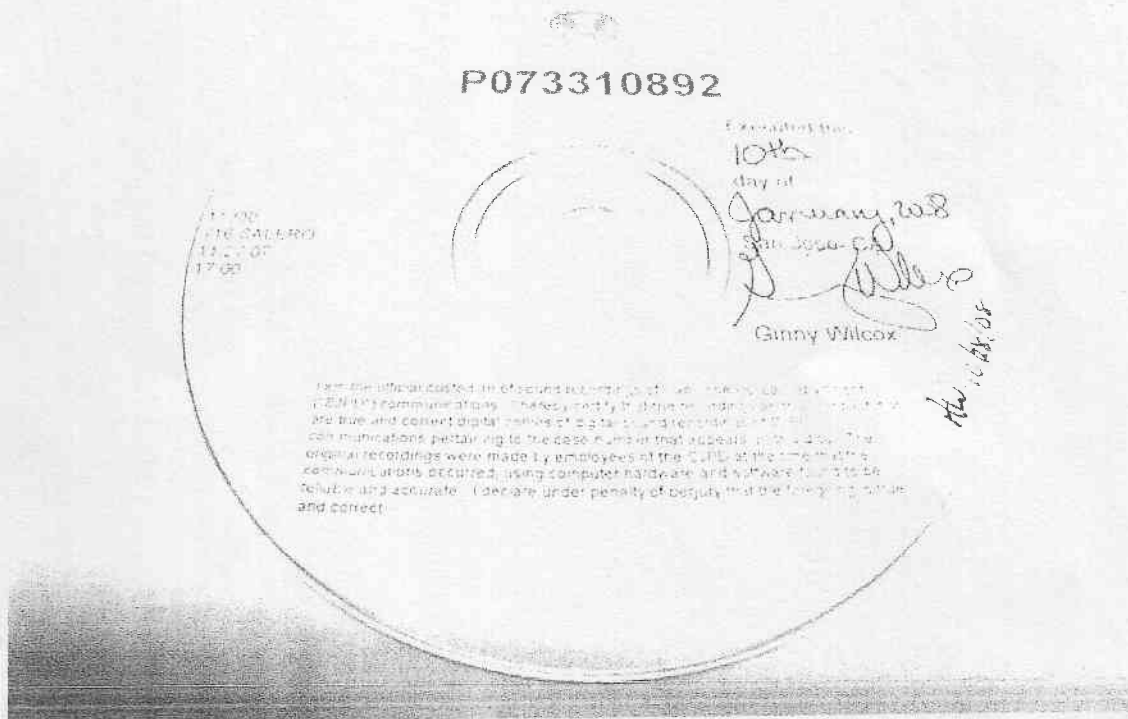
On or about October 15<sup>th</sup> 2008, I was contacted by Ms. Shari Nolan and asked to forensically examine a Compact Disc Recording. The CD, identified as PO73310892, contained three 911 calls that were alleged to have been placed by Mr. Roy Legge 11/27/2007 and one dispatch recordings. I have been asked to assume that these recordings are digital copy(s) of the incoming calls recorded by the San Jose Police Department. Nolan had concerns that the recordings appeared to be edited and that multiple recordings were used to create one. She contends that the following issues may have had mitigating factors in her case.

- 1) That there are actually three calls contained on the Nolan Discovery CD and not only the two calls as the state has claimed.
- 2) That the SJPd dispatch operator who initially took one or more of the calls from Legge was female and not male as heard on the recordings.
- 3) The listed time of the calls does not match Nolan's Verizon cellular phone records.
- 4) That vital statements made by Legge were either intentionally removed, redacted or selectively edited from the original recordings.
- 5) The recordings are not authentic, correct, accurate and complete data.

## Nature of Examination

### **Visual Inspection:**

The first step when receiving evidence for analysis is to mark, examine, photograph and log the material. I make notes of anything that may be of interest to the case and log that information. The first thing I noticed upon examining the CD was that it appeared to be signed and dated by Ginny Wilcox, 01/10/2008. There was no accompanying chain of custody record sent or shown to me by Nolan. However there was a printed label showing what appeared to be a printed signature of Wilcox.



A proper chain of custody record would insure this recording did in fact come directly from the San Jose Police Department. I could not verify if the CDR sent to my lab for analysis is the original or a copy based solely on statements made by Nolan. I do not know if this is the original copy sent to Nolan's attorney or given in the discovery phase however I was asked to assume it was.

### *Chain of custody:*

*This step has created stumbling blocks for proponents of admissibility. The proponent for the tape's admittance can assure the court that the item offered as evidence is substantially the same as it was originally by documenting its "chain of custody." A proper chain of custody begins with consecutively numbered and dated tapes. Careful logs are then kept which note the time of particular conversations and the locations on the tapes at the time of occurrence. These evidence tapes are sealed and stored in separate envelopes and appropriate chain of custody records are maintained by the evidence custodian. \*12\**

*Prosecutor Magazine - September/October 1995 by Steve Cain*

### Seven Tenets of Audio Authenticity:

1. Recording device was capable.
2. Operator was competent to operate the device.
3. The recording is authentic and correct.
4. Changes, additions or deletions have not been made in the recording.
5. The recording has been preserved in a manner shown to the court.
6. The speakers are identified.
7. The conversation elicited was made voluntarily and in good faith without any kind of inducement.

My analysis found tenet 3,4,5 and 6 to be in question in the Nolan case. I will address each of these in the following report based on the facts.

### Critical Listening:

Critical listening is the first phase of analysis and is done by aural examination. I listen to the recording and its content to get a clear understanding of what it contains and how I will proceed. When performing the aural examination, I listen to the quality of the recording to understand what type of enhancements it may require. I also listen for unusual occurrences of sound such as transients, gaps, audible dropouts, voice changes in pitch or tonality, tape speed of the recording or any sign of unusual continuance.

### Waveform Analysis:

Waveform analysis is the examination of the rendered wave files:

- 1) Ensure that the signal was recorded correctly
- 2) Signal to noise ratio
- 3) Transients: Spikes in the waveform that may indicate tampering or editing
- 4) Transformation: Dialogue that would appear to have been spliced in from another area
- 5) Deletion: Erasure, either accidental or deliberate
- 6) Obscuration: Adding sound to obscure the event or to mask the dialogue
- 7) Gaps: Areas contained in the audio that would appear to have either had a malfunction or been intentionally edited
- 8) Synthesis: the generation of artificial text by adding background sounds or conversation to the tape copy, which were not present on the original recording

### Call #1

This was listed as track 1 on the Nolan Discovery CD and actually contained two separate calls.

1. The first was an outgoing call made by Legge. 11/27 4:57P 408-555-1212 Peak Plan Allow San Jose CA 411connect CL 3 -- 1.49 1.49
2. The second was an incoming call made by SJPD to Legge. 11/27 5:02P Unavailable Peak Plan Allow San Jose CA Incoming CL 4 -- -- --

The first and second recordings contained no slate by either Wilcox, the agency involved in creating the copy or the dispatch office. I found this unusual, as this is a standard procedure on recordings such as this.

{Slate is a forensic term used for a statement recorded at the start and end of a recorded segment. It typically contains an agent(s) Identification, time, equipment placement and case information. It is critically important information in establishing factual data regarding the recording events.}

The first recording of Legge on the Nolan Discovery CD was not a continuous recording and certain audible clues could be heard in the listening phase of my analysis. One example of this was at the very beginning of the recording. The conversation by Legge was started mid sentence. This would indicate that there was additional dialog prior to the start of the recording that was redacted. The words following the start transient are "[inaudible] you got a gun?" The [inaudible] word is suspect because it happens at the start of the recording.

I reviewed a transcript of the calls given to me by Nolan. I found that on page 1 line 14 the transcript reads:

**"Hey you got a gun?"**

On the recording that I was given, I did not hear the word "Hey". A start transient cut the "Hey" off at the start.

*This transient was later confirmed in the waveform analysis phase of the examination. This edited dialog was not the only transient, edit or gap that I found. The forensic examiner is trained to listen for these and mark them as possible signs of tampering. The waveform analysis phase revealed further evidence, which confirmed there was indeed a transient.*

Starting at: 00:00:02.345  
Ending at: 00:01:08.545  
Length total: 00:01:06.200

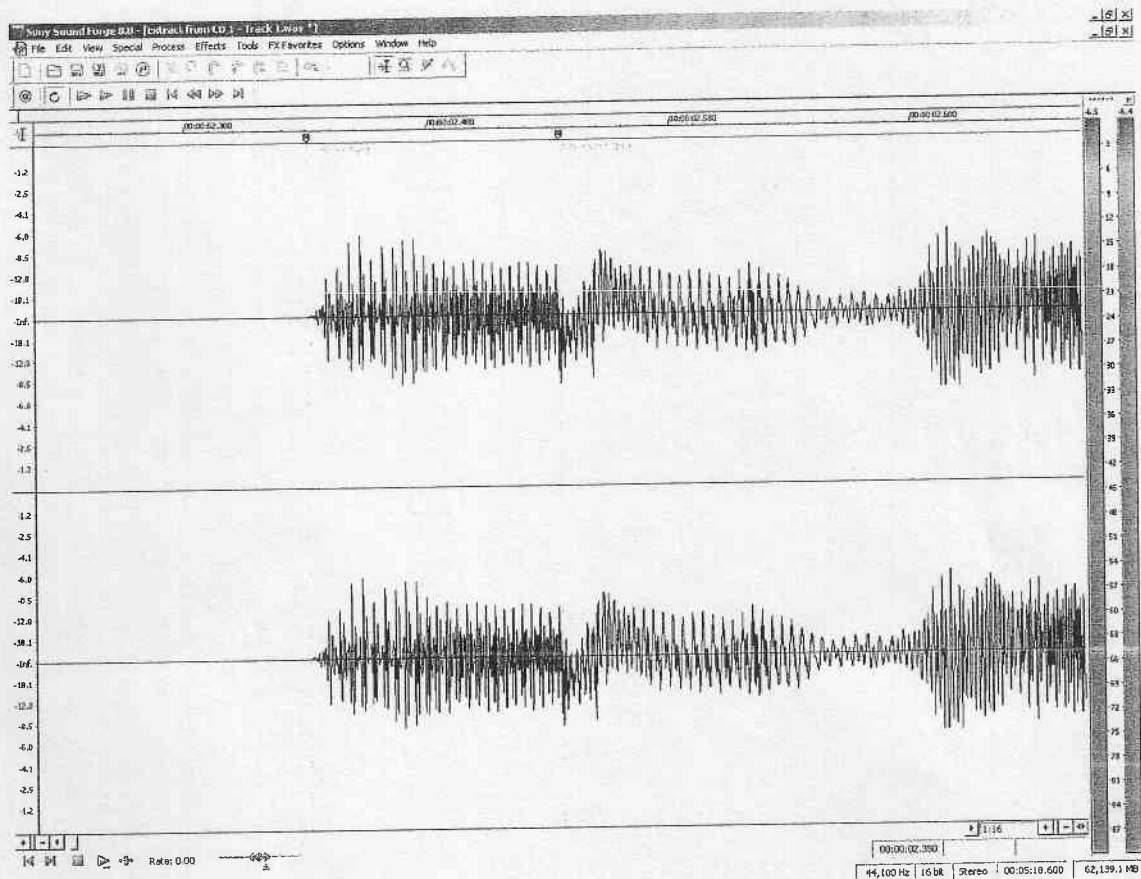
Total length or track one: 00:05:18.600 [includes 2 calls not 1]

This first 911 call was not a continuous recording in my opinion. The evidence points to an edit at the start of the recording rendering the dialog of Legge to be incomplete. There is also a volume swell or a volume ramp indicated in the waveform followed by an electrical impulse. This type of impulse is usually attributable to a switch or some sort of electronic signal generated by the hardware of the copying device.

I have captured an image of this volume change and the subsequent spike.

See the image on page 6 of this report.

This image was captured from the first Legge 911 call:



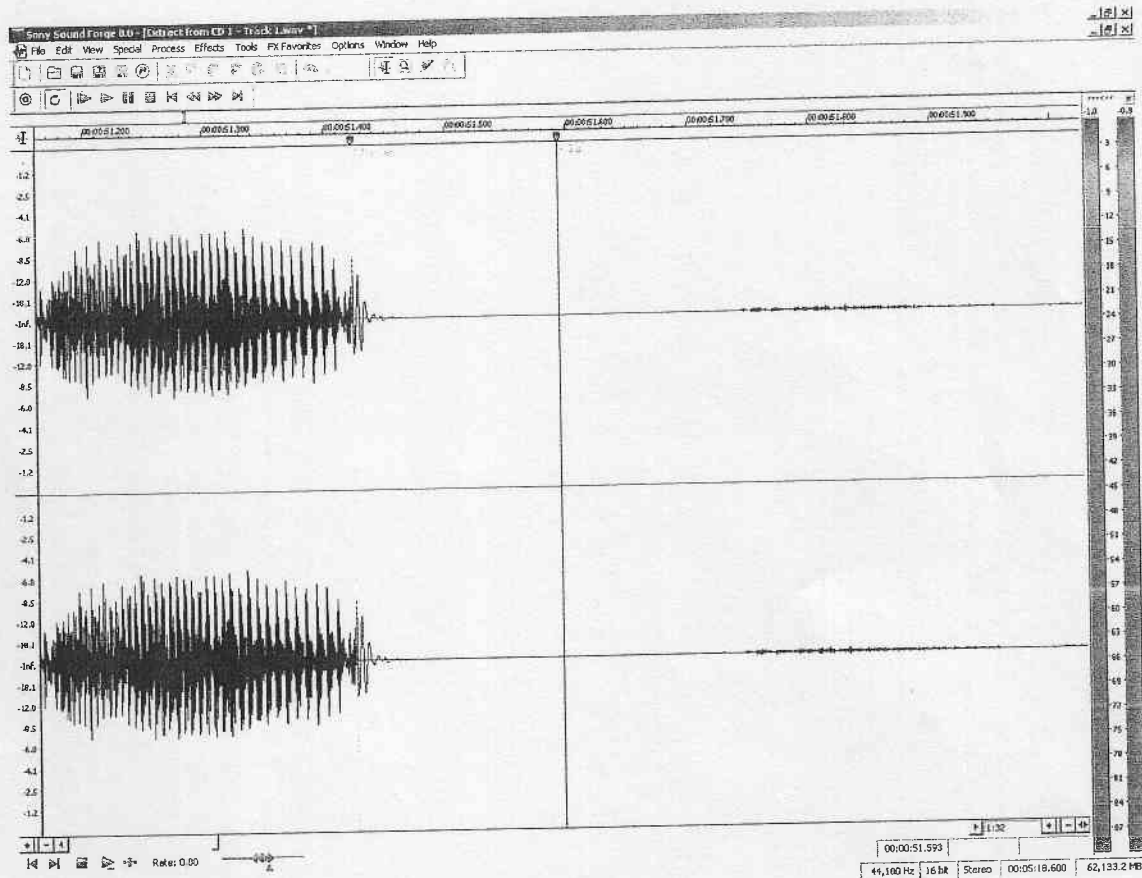
Looking at the orange marker number 1 we see a volume ramp caused by the edit process. Looking at orange marker number 2 we see the electrical impulse caused by a switch or possibly a potentiometer used to make the edit.

I formed my opinion based on my expertise and training in forensic audio analysis and waveform analysis. Upon examination of the wav file the discovery of numerous start/stop and stop/start transients became evident as well as muted gaps in Legge's dialog.

I have captured another image of a second transient followed by a gap or loss of signal.

See the picture on page 7 of this report.

This image was captured from the Legge 911 call:



In this picture we see a transient indicated by the orange marker number 3. This is followed by a gap in the audio indicated by orange marker number 4.

Such edits deletions or redactions could possibly be deliberate tampering or operator error. Any such transient that causes a discontinuance of dialog calls into question a recordings authenticity. When transients like these are discovered they throw up a red flag to the examiner. The following things can cause these transients.

- 1) Malfunction of the equipment
- 2) Electrical spikes caused by the copy equipment
- 3) End of tape automatic shut off
- 4) Deliberate tampering
- 5) Selective editing, Redacted content or Deletions.

Of the seven tenets four of them come into question based on the waveform analysis results from the lab. I will answer the four tenants as they pertain to this 911 recording.



**Tenant number 3: The recording is Authentic and correct.**

The Legge phone Call #1 on this CD cannot be authenticated, accurate or correct in my opinion. It is a copy and a copy cannot be authenticated unless it meets certain legal criteria.

Some states allow a “**Digital Copy**” to be considered an original. I would require the SJPD to send me a copy (if it meets the “**Digital Copy**” criteria) directly to my office to verify chain of custody.

My opinions are based on sufficient facts and data discovered during analysis. This recording cannot be considered accurate in whole or in part based on the above. The discontinuance of dialog also plays a part in the accuracy of the recording. This discontinuance of dialog is caused by transients and gaps contained in the recording which could be considered suspicious.

The recording lacked slate or audible identifications of any kind.

Intentionally starting or stopping a recording without any announcement or slate by the agent or investigator is suspicious. Deliberate editing, equipment malfunction or any suspicion of tampering cannot be ruled out without this slate announcement procedure. The slate tells many things to the examiner including dates, names and times. All are critical in establishing facts of the case.

**Tenant number 4: Changes, additions or deletions have not been made in the recording.**

The recording contained numerous transients and gaps caused by what appeared to be selective editing. Most of these appeared in areas of Legge’s dialog and may have contained factual statements recorded during the call. A transient causing a discontinuance of dialog could be considered suspicious until proven otherwise.

I have not yet examined the original recordings therefore I have not been able to do a comparison analysis to determine how they got there? And also more importantly if they exist on the original recordings made during the days in question?

Taking this into account one must look at these transients discovered as evidence of possible tampering based on the generally accepted standards and guidelines for audio authentication.

An original recording is considered authentic if it starts at the beginning of the recording and does not stop until the end. Any, stops or restarts should be announced by the operator. Original recordings should contain all of the audio information recorded at the moment in time that the event occurred. The recording should further not contain any break in its continuity or content, nor should it contain any suspicious signs suggestive of falsification.

**Examples of Tampering:**

- 1) **Gap** segments in a recording, which represents unexplained changes in content or context. A gap can contain buzzing, hum, or silence.
- 2) **Transients** - short, abrupt sounds exemplified by clicks, pops, etc. Transients may indicate tape splicing or some other interruption of the recording process.
- 3) **Fades** - gradual loss of volume. Fades can cause inaudibility and are considered gaps when the recording becomes fully inaudible.



4) **Equipment sounds** - inconsistencies of context caused by the recording equipment itself. Common equipment sounds include hum, static, whistles, and varying pitches.

5) **Obscuration** - distortion of a recorded signal with the purpose of rendering selective portions unintelligible (i.e. the eighteen-minute gap in the infamous Watergate tapes). This technique can also be used to mask splices, clicks, or suspicious transients.

**Tenant number 5: The recording has been preserved in a manner shown to the court.**

I have not seen any form of chain of custody other than a pre printed CD label.

**Tenant number 6: The speakers are identified.**

No announcements were made of any kind. The agency and or the agent(s) neglected to identify themselves. They did not slate or establish any critical information such as name(s), date(s), time(s), and chain of custody. There was no record of the recording device or copy device. No announcements of stop/starts, editing or pausing were made. The announcement of all of the above is a procedure that is critical in establishing the authenticity and admissibility of recorded evidence. If the original recordings contain these announcements they should be made available to the courts to clear up any questions raised in regards to the above. Furthermore if the original recordings do not match in length and dialog or do not contain the same transients then I would consider this highly suspect of tampering.

# Nolan's Phone Record

Invoice Number Account Number Date Due Page  
0615628636 708771314-00001 Past Due 19 of 32

## Detail for Shari Nolan: 408-857-6241

### Voice, continued

Date	Time	Number	Rate	Usage Type	Origination	Destination	Min.	Airtime Charges	Long Dist/ Other Chgs	Total
11/25	2:15P	408-639-3187	Off-Peak N&W		San Jose CA	Snp South CA	2	---	---	---
11/25	2:40P	408-710-0355	Off-Peak N Allow		San Jose CA	Morgan Hill CA	5	---	---	---
11/25	2:46P	408-555-1212	Off-Peak N&W		San Jose CA	411connect CL	14	---	1.49	1.49
11/25	3:13P	408-555-1212	Off-Peak N&W		San Jose CA	411connect CL	3	---	1.49	1.49
11/25	3:28P	408-648-4374	Off-Peak N Allow		San Jose CA	Incoming CL	2	---	---	---
11/25	4:13P	408-646-4374	Off-Peak N Allow		San Jose CA	Snp West CA	4	---	---	---
11/25	4:24P	408-710-0355	Off-Peak N Allow		San Jose CA	Morgan Hill CA	3	---	---	---
11/25	4:43P	408-623-3187	Off-Peak N&W		San Jose CA	Snp South CA	3	---	---	---
11/25	5:23P	408-857-6000	Off-Peak N Allow		San Jose CA	Incoming CL	1	---	---	---
11/25	6:23P	408-661-1470	Off-Peak N&W		San Jose CA	Incoming CL	1	---	---	---
11/25	7:13P	408-710-0355	Off-Peak N Allow		San Jose CA	Morgan Hill CA	1	---	---	---
11/25	7:15P	408-710-0355	Off-Peak N Allow		San Jose CA	Morgan Hill CA	2	---	---	---
11/25	7:17P	408-857-6000	Off-Peak N Allow		San Jose CA	Snp West CA	3	---	---	---
11/25	7:50P	408-710-0355	Off-Peak N Allow		Morgan Hill CA	Morgan Hill CA	2	---	---	---
11/25	8:49P	408-857-6000	Off-Peak N Allow		San Jose CA	Snp West CA	3	---	---	---
11/25	9:16P	408-710-0355	Off-Peak N Allow		Morgan Hill CA	Incoming CL	4	---	---	---
11/25	10:58P	408-826-9537	Off-Peak N Allow		San Jose CA	Incoming CL	23	---	---	---
11/26	10:53A	000-000-0086	Peak PlanAllow,Car/M		San Jose CA	Voice Mail CL	1	---	---	---
11/26	6:41P	000-000-0086	Peak PlanAllow,Car/M		San Jose CA	Voice Mail CL	4	---	---	---
11/26	6:47P	408-591-4457	Peak PlanAllow		San Jose CA	Snp West CA	12	---	---	---
11/26	7:35P	408-710-0355	Peak N Allow		San Jose CA	Morgan Hill CA	2	---	---	---
11/26	7:44P	408-710-0355	Peak N Allow		San Jose CA	Incoming CL	17	---	---	---
11/26	8:11P	000-000-0086	Peak PlanAllow,Car/M		San Jose CA	Voice Mail CL	1	---	---	---
11/26	8:53P	000-000-0086	Peak PlanAllow,Car/M		San Jose CA	Voice Mail CL	1	---	---	---
11/26	8:54P	000-000-0086	Peak PlanAllow,Car/M		San Jose CA	Voice Mail CL	2	---	---	---
11/26	8:56P	408-310-2493	Peak PlanAllow		San Jose CA	Morgan Hill CA	1	---	---	---
11/26	9:00P	408-355-5987	Peak N Allow,Span		San Jose CA	Incoming CL	3	---	---	---
11/26	9:07P	408-310-2493	Off-Peak N&W		San Jose CA	Incoming CL	19	---	---	---
11/26	9:53P	000-000-0086	Off-Peak N&W,Car/M		San Jose CA	Voice Mail CL	1	---	---	---
11/26	9:57P	Unavailable	Off-Peak N Allow		San Jose CA	Incoming CL	4	---	---	---
11/26	10:02P	408-826-9537	Off-Peak N Allow		San Jose CA	Snp South CA	2	---	---	---
11/26	11:42P	408-857-6000	Off-Peak N Allow		San Jose CA	Incoming CL	7	---	---	---
11/27	2:54A	408-857-6000	Off-Peak N Allow		San Jose CA	Incoming CL	1	---	---	---
11/27	1:11P	408-835-7437	Peak N Allow		San Jose CA	Sunnyvale CA	1	---	---	---
11/27	3:27P	408-872-6760	Peak PlanAllow		San Jose CA	Snp South CA	1	---	---	---
11/27	3:28P	408-229-0110	Peak PlanAllow		San Jose CA	Snp South CA	1	---	---	---
11/27	3:43P	408-710-0355	Peak N Allow		Morgan Hill CA	Morgan Hill CA	1	---	---	---
11/27	4:12P	408-972-8780	Peak PlanAllow		San Jose CA	Snp South CA	5	---	---	---
11/27	4:22P	408-972-8780	Peak PlanAllow		San Jose CA	Snp South CA	3	---	---	---
11/27	4:35P	408-591-4457	Peak PlanAllow		Morgan Hill CA	Snp West CA	3	---	---	---
11/27	4:42P	408-555-1212	Peak PlanAllow		Morgan Hill CA	411connect CL	2	---	1.49	1.49
11/27	4:43P	408-555-1212	Peak PlanAllow		Morgan Hill CA	411connect CL	1	---	1.49	1.49
11/27	4:43P	408-555-1212	Peak PlanAllow		San Jose CA	Voice Mail CL	1	---	---	---
11/27	4:57P	408-555-1212	Peak PlanAllow		San Jose CA	411connect CL	9	---	1.49	1.49
11/27	5:02P	Unavailable	Peak PlanAllow		San Jose CA	Incoming CL	4	---	---	---

Note the last two entries from page 19 of Nolan's Phone Records. They read as follows:

A.	11/27	4:57P	408-555-1212	Peak Plan Allow	San Jose CA	411connect CL 3	--	1.49	1.49
B.	11/27	5:02P	Unavailable	Peak Plan Allow	San Jose CA	Incoming CL 4	--	--	--

I have listed them as Entry/Call A and B.

Entry/Call A would appear to be a call placed by Legge and the highlighted section indicates that it was a 411 connect call and lasted three minutes [411connect CL 3] according to the log from Verizon.

Nolan's contention was that this call was the initial call placed to the SJPd and that Legge had spoken to a female operator requesting a "Civil Standby" during the first call. She further stated that the female operator Legge initially spoke with requesting a "Civil Standby" had been removed from the recording presented on the discovery CD.

If the Verizon record accurately reflects the actual time of the call placed to be approximately three minutes we can clearly see that Entry/Call A or Call #1 when measured in Sony Sound Forge as having an approximate length of 00:01:06.200 shows a discrepancy of approximately two minutes of missing dialog. This would indicate that the SJPd recording of Call #1 as it is presented on the Nolan Discovery CD is not an accurate or complete version.

Part of the call has been redacted, removed or selectively edited out. Could this be the call to SJPd and more specifically the female operator Legge spoke to requesting a "Civil Standby?"

The missing two minutes of dialog reflected in the Verizon record and edited from the alleged original recording should be considered suspicious. If additional dialog was removed in this case what was the reason for redacting or editing it out?

More importantly one should ask who was speaking and what was being said?

Concerning Call #2 if one looks at the Verizon Record listed as Entry/Call B or Call #2 above it also reflects a discrepancy in time correlation to the discovery CD. Entry/Call B has a documented time in the Nolan Verizon Record of approximately four minutes total. Again when measuring the length of the Call in Sony Sound Forge one gets a reading of 00:03:41.181. Approximately forty-nine seconds are missing.

The missing forty nine seconds of dialog should be considered suspicious and again would seem to indicate possible intentionally redacted data.

### Call #3

This was listed as track 2 on the Nolan Discovery CD and contained a conversation between Legge and a dispatch operator.

My analysis found tenet 3 and 7 to be in question. Dialog appeared to be interrupted as well as discontinued at times.

There were no area's in this recording where a slate or time/date was indicated.

Usually a dispatch recording will contain a slate inserted at the start and end time of copy process. I thought this was questionable as the other file I examined (#2) clearly had slate information. This should be explained. The question arises as to why one of the recordings clearly had the slate and the others did not.

It would appear that Legge was calling from a cellular phone.

This could potentially cause portions of the audio to be affected by the noise reduction chips built into a cell phone. At times it would appear that his voice was cut off abruptly [transients and gaps] and one could

see that the waveform revealed areas that were questionable. However I could not tell if the conversation was intentionally interrupted or if this was simply a malfunction due to the nature of the noise reduction chip in the cell phone.

I could also hear another voice in the background, which also appeared to have dialog interrupted. This voice sounded female but I could not tell for certain because it was so faint. It is possible that it may have belonged to a second female dispatch person in the same room as the male dispatch operator.

There was a question about the possibility of the dialog having been spliced or edited together. However I heard at least one occasion where both the dispatcher and Legge were speaking at the same time. This overlapping of the voices would not be an easy thing to edit together and in my opinion would seem to have occurred during the original recorded conversation.

### **Dispatch Recording**

This recording listed as track 3 on the Nolan Discovery CD contained the dispatch chatter recorded on the day of Nolan's arrest.

My analysis found tenet 3 and 5 to be in question.

This recording was slated at the start and end unlike the previous two files. It was approximately 00:28:39.200 in length.

- 1) The computer generated voice states at the start of track three: 17:01:13
- 2) The computer generated voice states at the end of track three: 18:03:51

When subtracting the start from the end time we are left with a total run time of: 01:02:38 or 1 hour, two minutes and thirty eight seconds.

Track three also contained time specific slated areas through the entire recording. The voice was a computer generated time sequence and gave specific times at which the incoming/outgoing radio dialog was recorded.

However if one adds up the time as indicated by the slate verses the actual running time of the audio contained on track three and measured with Sony Sound Forge, there is a significant amount of missing time.

- a) Computer generated Slate time: 01:02:38 One hour, two minutes and thirty eight seconds total
- b) Actual running time: 00:28:39 Twenty eight minutes and thirty nine seconds total.
- c) Missing time form track three is approximately thirty-four minutes.

This may be where unrelated chatter was intentionally edited from the recording. If this edited recording was in fact redacted and entered as discovery it should have been announced to clarify any confusion regarding the length and the missing time from the recording.

This edited version raises questions and in my opinion proves the capability of Wilcox to redact or edit audio before it is released as discoverable. In my opinion the following tenets for admissibility and authentication are in question.

Tenet 3: The recording is authentic and correct.

Tenet 4: Changes, additions or deletions have not been made in the recording.

Tenet 5: The recording has been preserved in a manner shown to the court.

Tenet 6: The speakers are identified.

It is a standard procedure to announce any intentional start or stop and that may explain why the time stamps were inserted as they were. An explanation as to why this recording appeared to follow partial slating standards and yet the other two did not might help better explain the nature of the recordings as they were presented in discovery. The lack of any slate on tracks one and two of the recordings raise questions about the accuracy and content of the dialog.

### **Conclusion**

It is my opinion, to a high degree of certainty, based on my expertise in forensic audio analysis, that these recordings cannot be verified as accurate, true or authentic due to the numerous transients and gaps contained therein. Multiple errors occurred in the standards and guidelines established by the court system. Maintaining these rules and regulations are essential in cases such as this because of the nature in which the evidence is to be presented in a court of law. The admissibility of these audio recordings is questionable as well as any transcripts accuracy based on the discontinuance of dialog caused by the discovered transients or gaps. Any omitted, deleted, selectively edited or redacted dialog should be considered.

Therefore the accuracy of all four recordings contained on the Nolan Discovery CD are questionable and should be considered in my opinion.

My opinions are based solely upon my analysis of the audio recordings in question and I am completely impartial as to the outcome of this case. I was retained as an expert to report the facts as to the authenticity of this recording. I have done so to the best of my ability.



Arlo E West [ACFEI, AES, PPSC]  
President/CEO  
Creative Forensic Services LLC  
11 Elmwood Road  
Auburn, Maine  
04210

LAB: 207-784-0257  
CELL: 207-577-0151

## ARLO EDWARD WEST

AES, ACFE, PPSC, NYIFA CERTIFIED FORENSIC AUDIO and VIDEO EXPERT

- Member of AES Audio Engineering Society, International
- Member of ACFEI American College of Forensic Examiners International
- Staff Member of PPSC Police Policy Studies Counsel
- NYIFA [New York Institute of Forensic Audio] Certified in Enhancement, Authentication of both Audio and Video.
- Qualified Expert in several states including IA, FL, ID, ME, DC, MA, AK, NH, CA, TX.
- I have provided forensic expertise in over 500 cases including the following,

- 15) § STATE OF MAINE v. DANIEL ROBERTS [Docket No. AND-07-455]
- 16) § STATE OF IDAHO v. SARAH JOHNSON [Docket No. 33312]
- 17) § STATE OF MAINE v. SARAH ALLEN [Docket No. 292 A.2d 167]
- 18) § UNITED STATES v. SANDOKO BRANDON [Docket No. CR-02-193]
- 19) § VALDA JOHNSON v. DAVID HOLWAY [Civil Action No. 03-2513 (ESH)]
- 20) § STATE OF MAINE v. DANIEL POULIN [Docket No. CR-08-50-B-W]
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- 26) § UNITED STATES v. RICARDO CORDOBA-RAMIREZ
- 27) § STATE OF NEW HAMPSHIRE v. TRAVIS MAIERS
- 28) § STATE OF COLORADO v. RYAN LACKEY

1987 - 1998 Dallas Sound Lab; Professional Audio Engineer and Forensic Audio Expert.

Assistant Engineer, Digital Audio Editing for Grammy award winning rock group "U2."

Assistant Engineer, Audio Dialogue Replacement for the Oscar award winning motion picture "Titanic."

Audio Engineer, Live I.S.D.N. feed for NFL commentator "Pat Somerall" during halftime commentary.

Assistant Audio Engineer for the Tony Melendez CD "Hands in Heaven."

Assistant Engineer, Audio Dialogue Replacement, Universal Pictures, TBS, Warner Brothers, for the motion pictures "Leave It to Beaver", "Rough Riders", "Tarzan and the Lost City".

Audio Engineer, Foley Assistant, PBS, "Wishbone" and "Barney" children's programs.

Software Development, Audio Engineer, Dave Faherty from CBS golf, for Microsoft Corporation.

Audio Engineer, Forensic Audio Analyst, Digital Audio Engineer.

Assistant Engineer, Mary Kay Corporation, Dallas Texas).

1986-2002 Composer, Midi Engineer, Producer, Dallas Sound Lab in Irving, Texas)

1974-2002 (Internationally known musician and band leader, Arlo West Band.

CFS Press releases, (US) Johnson murder trial story from L/A Sun Journal Sound on Sound magazine  
(UK) L/A Sun Journal (USA)

Proficient Computer Skills in (Macintosh and Windows, Multiple Audio Platforms, Web Authoring,  
Graphic Design and Layout, Flash, Networking, Computer Design and Maintenance)

Musical Instrument Digital Interface, MIDI Composer and engineer.

Accomplished Guitarist, Internationally Known Blues Musician and Songwriter.

Recorded and Produced over 14 albums of original music as Arlo West.