In the case of Patrick Frey **Rancho Palos Verdes, CA** **patterico@gmail.com**	**FORENSIC AUDIO DECLARATION** **Regarding** **VOICE IDENTIFICATION**

"Swatting Hoax" Case **Audio Investigation**	**DECLARATION OF KENT GIBSON** A FORENSIC AUDIO & VIDEO EXPERT FORENSIC AUDIO Forensicaudio.org 3251 Oakley Drive, LA CA 90068 323-851-9900

I, Kent Gibson, state the following, of which I have personal knowledge:

I am the founder of Forensic Audio (ForensicAudio.org), which is an 18 year old company based in Los Angeles, California. Regular clients include the FBI, the US Secret Service, LA Superior Court, LA County Sheriff, LA Public Defender's Office, Pasadena PD Homicide Assaults, Santa Clara Sheriff's Dept, Santa Rosa County, San Bernardino County Sheriff's Department and many private law offices and various other courtroom representatives. I am a Certified Audio & Video Forensic Examiner for LA Superior Court, and chosen by the LA County Sheriff as a contract examiner for the county. I hold a BA from Yale University in Psychology of Communication with a Specialty in Linguistics. I have an MA from Stanford University Department of

Communication specializing in audio and video. ForensicAudio.org specializes in examining and preparing audio and visual evidence for use during litigation. Additionally Forensic Audio authenticates recordings looking for alterations and edits, performs **voice identification** and prepares certified transcripts.

In the present case, I was contracted on approximately 19 January 2012 by Patrick Frey to examine a cluster of 4 recordings in the case involved in a "swatting" investigation. A "Swatting Hoax" is where an individual calls 911 posing as another individual (in this case Mr. Frey and Mr. Stack) claiming a crime has occurred at the victim's home that will cause the police to respond quickly, often with guns drawn.

The question asked: using techniques of Forensic Voice Identification, are the voices in the various recordings the same speaker.

Voice identification is the forensic audio process where the examiner attempts to determine if a specific "Unknown" voice is the same speaker as in another "Exemplar" voice sample.

There are several legally accepted methods of voice identification. The first method is the aural spectrographic method (the gold standard in this area), the second is an average pitch analysis, and the third is a total variability (Gaussian Method). In addition a linguistic analysis may apply.

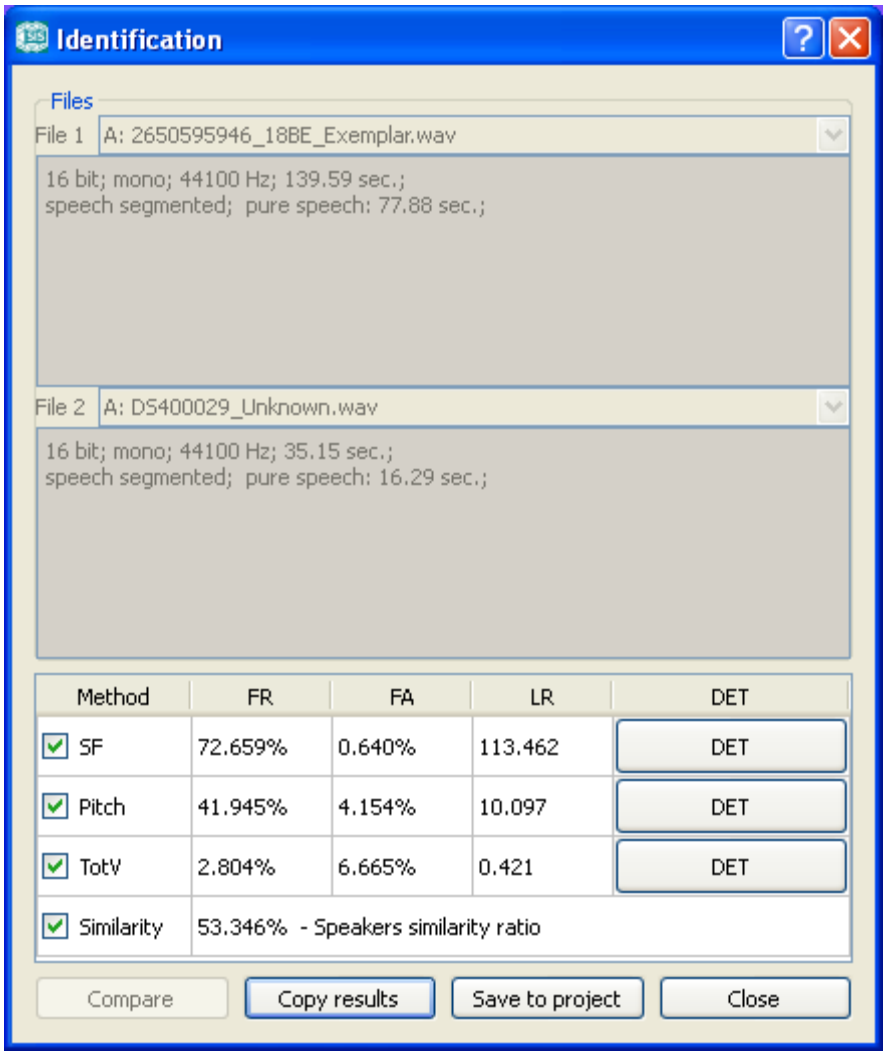
Previously aural spectrographic analysis required an array of 10 to 20 like words in order to make a comparison. Due to advances in technology mostly by the Speech Technology Center (STV) in St. Petersburg, Russia, (also known as SpeechPro) the manual method of voice ID requiring a verbatim exemplar has been superseded.

SpeechPro has been a world leader in forensic identification for over a decade and NIST 2010 results further confirmed the trend. A SpeechPro team of experts headed by Natalia Smirnova correctly identified 150 samples of carefully selected "confusing" samples. This was an unparalleled result for NIST 2010. The evaluation took 3 months and was carried out by SpeechPro in accordance with the regulations and under the permanent supervision of NIST. Natalia Smirnova's team has processed 150 pair comparisons of different voices while spending less then 1.5 hour on each comparison. Even in such a speedy rhythm SpeechPro's expert team achieved a phenomenal precision and was able to show the best result at the evaluation.

The newly released SIS II software bundle includes plug-in voice identification modules that utilize the unique algorithms developed by STC and SpeechPro. SpeechPro today is the premier forensic software manufacturer that produces advanced solutions both in automatic and human assisted speaker recognition. SIS II uses the three commonly accepted measures for voice ID: spectrographic/formant analysis (**SF**), fundamental frequency (**Pitch**) statistical analysis, and Gaussian Model (Total Variation Statistical = **TotV**) analysis. This software is text independent and language independent.

Below is a typical screen shot (not from this case) of the results from the Voice Identification Module of the SIS II software from Speech Technologies Corporation. FR stands for "False Rejection" or the probability of error if we assume the two samples are different. FA stands for "False Acceptance" or the probability of error if we assume that the two voice samples are the same. LR is a weighted ratio of the results. The Similarity score is created by a weighted combination of the SF, Pitch and TotV score. These

parameters can be included (if checked) or not included (not checked). A 60% Similarity indicates a very high probability of a match between the Unknown Voice Sample and the Exemplar (Known) Voice Sample.



In this case the following files were presented for evaluation: Tag names for these four recordings are shown in **BOLD**. The represent calls from two Swat Hoax cases, one involving Patrick Frey and one involving Mike Stack.

- G-8025959 **FREY SWAT** - Call made to 911 claiming a shooting at Mr. Frey's residence on 7/1/2011 at 12:16 AM. Caller impersonates Patrick Frey.
- Stack Call – **STACK SWAT** – Call made to police dispatch in Readington, New Jersey. 6/23/2011 Caller impersonates Mike Stack.
- Ron Brynaert Interview.mp3 – **BRYNAERT KNOWN** – an internet radio interview. This caller is suspected of being the Swat caller re: Frey.
- Lee Call-in Radio Show – **LEE KNOWN** (Lee is interviewer's name, not caller.) This caller is suspected of being the Swat caller re: Stack.

Although SIS II does treat the files it analyzes by minimizing music, random sound effects, ambient noise and buzzes, I typically go through the file to create a "Parsed" version. This assures that only the speaker in question is included and that all wayward sounds that might confuse the program are eliminated. SIS II further extracts the "Pure Voice" component of the file, eliminating the sound between words.

Below is a grid showing the results between comparisons between all of the calls. The grid indicates the following:

- Frey Swat and Brynaert Known cannot be shown to be the same speaker based on the SIS II testing, possibly due to small sample duration and the speaker disguising his voice; however, as explained below, it is this

examiner's opinion that Frey Swat and Brynaert Known are probably the same speaker, based on the totality of the evidence, including other testing.

- Stack Swat and Lee Known are the same speaker.
- Stack Swat and Frey Swat are the same speaker.
- The match between all other pairings is uncertain.

Frey -SISII Analysis - Speakers Similarity Ratio				
	Frey Swat	Brynaert Known	Stack Swat	Lee Known
Brynaert Known	30.25%			
Stack Swat	62.44%	49.41%		
Lee Known	53.36%	54.67%	64.20%	

This provides us with a conflicting transitive condition. If the Swatters are the same and the caller on Lee is the same as the swatters, then it would follow logically that the caller on Lee should be the same as Frey Swat. The ratio for that comparison is only 53.36%, somewhat short of the 60% expected for a positive match.

Similarly, the Brynaert Known comparison to Stack Swat and Lee Known hover around 50%. This is an indication of similarity, but not a positive match.

A Forensic linguistics analysis shows many similarities of all four voice samples. In linguistics I use the term "Prosody" to indicate the music of voice. All four exhibit a similar "laid back" style of speaking with a slow delivery in an almost monotone voice with little pitch variation. To my trained ears, they all sound very very similar. The Frey Swat call exhibits a change in vocal quality partway through the call. It is likely the speaker was trying to disguise his voice at the beginning of the call.

To further investigate, I decided to run SIS II with the Total Variation parameter and Average Pitch parameter unchecked. This means the analysis uses the Formant Spectrographic technique alone. The new grid looks as follows:

Frey -SISII Analysis - Spectral/Formant parameter only				
	Frey Swat	Brynaert Known	Stack Swat	Lee Known
Brynaert Known	58.64%			
Stack Swat	55.50%	58.64%		
Lee Known	37.84%	90.69%	95.08%	

CONCLUSION: Considering all of the evidence presented, it is my expert forensic examiner opinion that it is probable that all voice samples come from the same person. Deviation from the expected can be explained by small sample lengths (e.g. the Frey Swat call has only 9.8 seconds of pure speech) and intentional voice masking by the Swatter.

I hereby declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct to the best of my knowledge, and that this Declaration was executed on the 25th day of February 2012.

Kent Gibson

Digitally signed by Kent Gibson
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Date: 2012.02.25 14:56:35 -08'00'

Kent Gibson - Forensic Audio

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