

Inspection of Voicemail Evidence Casts Doubt on Authenticity

Analysis discredits defendant's claim about recording's origins

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As a forensic expert, I frequently am asked to authenticate—in both civil and criminal cases—messages left on answering machines. Such recordings often turn into key evidence that can be critical to the outcome of protracted litigation.

Take a recent civil case in which I served as the plaintiff's forensic audio expert. A man was in the midst of a bitter lawsuit with an ex-lover, and had sued to get back some of his belongings that were allegedly in her possession. The dispute became so bitter that a judge issued a mutual restraining order forbidding the parties from directly communicating with each other.

Subsequently, the woman claimed that the plaintiff, who happened to be an attorney, left several messages on her answering machine—in violation of the restraining order. The plaintiff claimed the digital messages submitted as evidence were not accurate and that any messages left on the answering machine occurred before the issuance of the restraining order. Therefore, the timing of the actual messages, and the authenticity and originality of the tape-recorded evidence, became a major point of contention.

My wife, a special agent for the federal government, notes that many criminals incriminate themselves by revealing too much information in an effort to cover up their crimes. This case was no different. The defendant claimed that all incoming messages ("ICMs") were left on a digital answering machine, and that the analog tape recordings presented to us were first generation copies of the originals. Our analyses refuted that contention.

Digital vs. analog—what's the difference?

If an item of evidence is not authentic, then it may be held inadmissible.

The trend in civil and criminal cases is that experts are being relied upon more and more to evaluate evidence, and such evaluation may be used to determine its weight or, ultimately, its admissibility.

In this case, all ICMs were held out as having been made onto a simple digital answering machine. **As in any case like this, we conducted a physical examination of the putative original recording and putative original recorder and then created a bit-to-bit, exact digital copy of it.** That became our working copy.

We then put a critical ear to the recordings. This step cannot be overestimated, and no high-tech, state-of-the-art digital equipment can replace such human intervention. **To the trained ear, there are marked differences between analog and digital recordings.** In a simple analog sound recorder, a motorized mechanism called a transport moves the tape past the magnetic heads during recording or playback. Small speed variations produce an artifact called "wow and flutter," which doesn't occur in the playback of digital recordings.

Another very significant difference in an analog source of ICM, and a digital source of ICM, is that of noise. Noise in a taped analog medium can have several sources, like motor (electronic circuitry) noise, head-loss resistance noise, artificial noise (e.g., RFI [radio frequency interference]), and ultimately noise from the tape's coating itself. All of these noise sources are characteristically absent in the pure digital recording and playback processes.

In the technical sense, there are errors that occur in direct analog recordings that manifest themselves as acoustic characteristics of analog—and not digital—signals. These errors include signal amplitude fluctuations, tape speed variations, errors in tape duplication, noise, distortion, dropouts (tem-

porary signal loss leading to signal degradation), and crosstalk (extraneous signals picked up from adjacent tracks on analog tape).

In this particular case, we noted very audible and obvious sounds characteristic of analog, not digital. These included motor noise, squeal (perhaps due to excessive scrape flutter), skew (poor high frequency response perhaps due to a worn capstan), hum (perhaps due to faulty shields or ground connections), inordinate amount of tape hiss, and distortion.

That strongly suggested to us that this tape was not an original. There are no transport noises in a digital recording system, since there are no transports to move any tape. There can be no skew in a digital recording system, as there are no capstans to wear. Hum in a digital system may not sound like the hum due to faulty shields or ground connections typically found in an analog recorder. There should be no tape hiss in a digital recording system as there is no tape to produce hiss. Distortion is usually imperceptible in a digital recording system, whereas it may be very noticeable in analog recordings.

Furthermore, the defendant produced the answering machine that allegedly made the first-generation recordings. We conducted controlled test recordings from this machine on virgin tape to determine its functional status. **Those tests revealed no mechanical problems and showed no signs of leaving any type of acoustic anomalies found in the recordings submitted.** This is additional crucial information, as it is practically impossible for the analog recorder to work properly when bought, somehow malfunction during the making of the "original" (first-generation) recording, and then work properly again by the time it reached our labs.

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Evidence of tampering

We concluded the more likely realistic scenarios about the evidence submitted:

1. The submitted recordings did not come directly from the analog recorder submitted, which is substantively contrary to the defendant's testimony.
2. The submitted recordings are not direct, first-generation copies from the putative digital answering machine, which is substantively contrary to the defendant's testimony.

Either possibility at least materially discredits the defendant's testimony and at most reveals the perjury in the testimony. **The defendant adamantly stated under oath that the cassettes submitted of the ICMs came directly from the digital answering machine via the submitted analog tape re-**

recorder. But digital answering machines can't make the type of sounds we found on the recordings from an analog recorder that presumptively has always been working properly.

There are a variety of scenarios that could explain the evidence we found on the recordings. For example, an analog tape recording could have been played through a telephone onto the digital answering machine on the other end of the line. **But a more likely possibility is that a first-generation recording was tampered with or edited while making the second-generation copy. The second (or subsequent) generation copy was then fraudulently held out as the "original."**

All in all, it was forensically tenable to state that the submitted evidence was not original and/or not authentic. This was the only realistic conclusion when objectively and scientifically reconciling the forensic analyses with the defendant's testimony.

Herbert Joe, an attorney licensed in Texas and Oklahoma, is a Board Certified Forensic Audio/Video Examiner, a Diplomat of the American Board of Law Enforcement Experts and a Fellow of the American College of Forensic Examiners. He is also the managing partner of Yonovitz & Joe, L.L.P., a team of forensic audio/video analysts, experts and consultants based in Dallas, Texas. He may be reached at 800/650-TAPE.

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News Briefs

FROM BNA & WIRE REPORTS

Yahoo! Promises to Go After Chat-Room Predators

The top Yahoo! official in England has confirmed that the company will have an inspector charged with making sure the Internet service's Messenger system is free of pedophilia content.

In an exclusive interview with ZDNet News UK, Martina King, UK managing director of Yahoo!, confirmed that the company is about to employ a Yahoo! "inspector" charged with ensuring that Yahoo!'s Messenger system is not polluted with pedophile content.

King also confirmed that she is receiving advice from organizations such as Childnet International and the police. If they recommend that chat rooms should be abolished because of the threat of pedophiles, King said she would do it.

King said the decision is the first in a series of steps the company will take to "deal with the unacceptable use" of chat rooms by pedophiles to lure children into abusive liaisons offline.

If the inspector suspects a pedophile is using Yahoo!'s facilities, the police will be notified and the two organizations will work together to prosecute that user.

King said Yahoo! worked with the police to trap a man who lured and raped a 13-year-old girl he met through a Yahoo! chat room.

King shared some of the plans the company is considering to eradicate predators from its service.

"I think one of the most important things to realize here is that this is not just a chat issue, but clearly they (pedophiles) are abusing our terms and conditions. ... We've been looking at several different ways, including credit card registration, to help us deal with this."

Credit card registration would provide Yahoo! with traceable information that can be passed onto the police if a pedophile is suspected of operating on the company's services, she said.

Mark Your Calendar

The ABA TECHSHOW 2001 will be held March 15-17 in Chicago. The program regularly attracts more than 2,500 attendees from around the globe. The event includes six different tracks, and attendees can earn CLE credits. This year's sessions include "Computer Forensics for Litigators" and "Electronic Discovery—Do You Know What to Look For, and How to Find It?" For more information, visit the conference web site, www.techshow.org.