

VIDEO
RESOURCES
VR
INCORPORATED

EVALUATION OF VARUN
GANDHI SPEECH VIDEOS
for New Delhi Television Limited

received 2 CD-ROMs (identical contents)
and 2 Video DVDs (identical contents, created from files on CD-
ROMs)

for evaluation as to authenticity and integrity of
video files depicting speeches by Varun Gandhi

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April 2, 2009

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Conclusion:

I find no evidence that the audio or video on the two WMV files provided has been materially altered.

There is one insignificant audio overdub in the first file "varun notice.wmv" lasting a few seconds. The audio for the nighttime speech clip in "varun notice2.wmv" is not perfectly synchronized with the video, but can be brought into perfect sync with a delay of two frames. The clips are out of sequence in the first file, but all cuts are obvious and do not appear to have been done deceptively.

Analysis:

Timecodes listed in this document are minutes:seconds frames of the original Window Media files followed by the corresponding time code from the DVD dubs. Analysis was done to the files rather than the DVDs, since they were the source of the footage and thus the best quality.

Both files consist of short clips. The transitions between the clips are obvious. I have no way of telling if there was additional footage shot that has been omitted. It can be assumed that the clips are not in the correct time order in "varun notice.wmv," since there is repeated material for instance 0:17.00 (00:00:15:00) and 4:17:00 (00:04:15:00).

Some transitions between the clips are rough, resulting in stuttering audio and video at those points. There are also glitches that appear to be caused by defects the original tape footage, such as the one at

4:26.16 (00:04:24:15) in "varun notice.wmv." These are typical of DV tape recordings captured to computer via Firewire. We can rule out the possibility that any of this footage originated with a cell phone camera, since the resolution and quality are too good and glitches of this type would not be present with cell phone footage.

Other than the DV based tape format being used, there is no way to determine the exact make and model of the equipment that was used to shoot the material, since it has been encoded as a WMV file.

Both files have been deinterlaced, most likely in the process of encoding the WMV files. This results in a double image on individual frames during quick movement. The files resolution of 640x480 is not native to India's PAL video standard, and is also a result of the encoding.

While it is often difficult to authenticate low-quality audio in cases like this, in this particular instance the audio has been captured in stereo on both files. Overdubs and other alterations are relatively easy to disguise in mono, but in stereo the would be overdubber needs to also recreate a realistic and consistent stereo field. The position of the sounds in the stereo field must be consistent both internally and relative to the movement of the camera, and the ambiance and reverberation of the location must also be seamlessly recreated. This is extremely difficult, even for a Hollywood audio facility. Thus the main topic of my analysis is a search for inconsistencies in the stereo field of the audio tracks or indications

that some of the audio has been mixed in from another source. Such an investigation primarily uses human rather than technological analysis, with analysis equipment used primarily to explain or discount anomalies noticed by the investigator.

Since I do not speak the language, I cannot evaluate the contents of the speeches.

First file - "varun notice.wmv"

This file includes clips taken from two cameras located in close proximity to each other. They can be told apart by the quality of the picture. The first camera has a reddish, somewhat washed-out picture, while the second-one is considerably clearer with better white balance and black levels. For instance, the first 14 seconds are from the lower quality camera, then it switches to the higher quality camera through the 35 second mark, at which point the first camera returns. Since the WMV file switches back and forth between camera, one can assume that some very basic editing has been done.

Audio was primarily being picked up from a loudspeaker to the right of the cameras position.

At approximately 0:30.12 (00:00:28:12) in the first file, there is a significant change in the stereo field and level of crowd noise. Indicating an audio overdub from this point to 0:35.16. I cannot tell the source of the overdubbed audio although it is most likely the other camera, since it does match up with the video. I understand

this portion of the footage is not one of the clips of particular interest. I can only speculate as to the purpose of this overdub but I don't believe it was done to be deceptive, since it's fairly obvious, it clearly matches the video, and it consists of repeated text.

At approximately 3:39.00 (00:03:37:00) (at the words, "Osama Bin Laden") there is what seems to be a very slight change in the stereo field with Varun's amplified voice shifting slightly to the left. I do not believe this indicates any alteration. Varun has his face turned away from the microphone immediately preceding this point says "Osama Bin Laden" directly into the mic. The apparent change is merely increased distortion in the left channel arising from the additional volume. The crowd noise at this point matches the video and does not shift. There is no other evidence of tampering in this clip.

Since I understand the lip-sync in this file has been a concern, I used an image stabilizaiton program (vReveal) to eliminate the shaky camera movement thus giving a better view of Varun's face. The lip movements are entirely consistent with the audio track. There is no indication of replaced or altered audio.

Second file- "varun notice2.wmv"

The footage in the first part of this second file looks more professional than that in the first file. Both the image quality and the camera work are much improved, and the camera person is considerably closer to the stage. In the first speech captured, the camera microphone is

picking up Varun's voice directly from the stage in addition to the amplified sound. I found nothing suspicious in the daytime footage.

The nighttime speech that starts at 1:59.23 (00:07:16:10) has some peculiarities in its audio track. First of all, the stereo field appears to be reversed. IE the left channel is on the right and vice versa. There are several shifts in the stereo field. There are also a couple of points at which the field collapses into virtual mono, such as at 2:28:00 (00:07:44:10). However, there is a very simple explanation for all of this: The microphone is hand-held, away from the camera, upside down (hence the reversal of the stereo channels). Since this speech is obviously being recorded surreptitiously from within a crowd of people, having the microphone separated from the camera certainly makes sense. I want to emphasize that tampering with the audio not create these effects. If there were abrupt changes it would be a point of concern, but the gradual shifting heard here would actually require considerable extra effort to imitate, and would be pointless since there's nothing onscreen to suggest it.

The video in the nighttime clip leads the audio by 2 frames. After synchronizing the audio and the video using the Avid system, I determined that the match is precise, and thus there is no reason to suspect that the audio is doctored or contains anything other than the speech shown in the video. I can only speculate as to why this clip would be out of sync when the rest of the file is in sync but given the anomalies described above, it seems likely that another recorder was

used to capture the audio (perhaps the other camera), and the audio was then combined with the video - 2 frames out of sync- after the fact.

One thing I noticed in the video that I wanted to point out: It appears that Varun is aware of the camera people and does not want to be videotaped. At 1:17.18 (00:06:34:00) (the daytime speech) he appears to be telling the camera person to stop taping. And at 2:37.00 (00:07:53:00) (the nighttime speech) he appears to notice the camera again, at which point the camera person lowers the camera and the recording ends.

I did not do any in-depth analysis of the interview or other footage that begins of 2:39.12 (00:07:56:00), since Varun is not in this footage.

DIGITAL EVIDENCE

CONFIDENTIAL INFORMATION:

THE CONTENTS CONTAINED HEREIN ARE DEEMED
PRIVILEGED AND CONFIDENTIAL.

Forensic Audio and Video Evidence Analysis of:
Audio and Video Files Containing Memorialized Public Address
Sequences of Mr. Varun Gandhi

Forensic Audio and Video Evidence Analysis Conducted on: May 6,
2009 through May 14, 2009

Forensic Analysis and Report Prepared on Behalf of:
Ndtv

Forensic Report Written and Prepared by:

Michael L. Jones
Certified Court Video Specialist, No03121
May 13, 2009 and May 14, 2009

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Forensic Audio and Video Evidence Analysis of:
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Forensic Audio and Video Evidence Analysis
Summary of Qualifications

Michael L. Jones, CSCV, CCVS

Microsoft L. Jones, Founder, Chief Executive Officer, and Certified Senior Court Video Specialist with Digital Evidence Legal Video Services, a full-service legal video and litigation support firm specializing in audio and video evidence solutions.

Prior to founding Digital Evidence in 2001, I spent more than 28-distinguished years producing, and directing award-winning documentaries, news stories, and high-profile investigate segments for ABC, NBC, CBS, FOX, and WB Television Networks.

I have extensive experience as a cameraman, editor, audio technician and remote broadcast technician.

I am the recipient of 2-Golden Mic Awards, presented by the Radio and Television News Association of Southern California. In 1992, I won my first Golden Mic Award in the category of "Best Hard News Videography" for a Fox Undercover mini-documentary that I

videotaped and co-produced. As a Director of Photography with the Fox Television network, I was nominated for an Emmy Award in the category of "Best Videography on a Breaking News Story." During my tenure with Fox-TV in Hollywood, California, I was cited repeatedly for superior service to the Network.

In 1999, I won my second Golden Mic Award in the category of "Best Live Coverage of a Breaking News Story" while co-producing a high-profile news segment for the WB Television Network.

During my tenure with the ABC owned and operated television station KABC-TV in Hollywood, California my camera work assisted the network with winning an Emmy Award for "Best Live Coverage of a Breaking News Story."

Prior to the election of President, Barack Obama, I was assigned and contracted by the broadcast Networks to provide televised coverage of every United States President since the resignation of President, Richard M. Nixon.

I received my Board Certified legal video training from The American Guild of Court Videographers; the nation's leader in training professional Videographers in all aspects of legal videography.

I earned the status of Certified Court Video Specialist by completing The American Guild of Court Videographers forensic legal videography training and certification program in September, 2003. I

successfully completed my Board examination with a grade point average of 96.5.

Over the past six years, my firm has produced sophisticated audio and video evidence exhibits for presentation during mediation conferences and in court of law.

My firm has been appointed by Federal and State courts to conduct forensic audio and video evidence analysis and enhancements on high-profile cases in California.

I have qualified as an expert, and I have provided expert testimony in courts of law relative to complex audio and video evidence exhibits. My firm has worked on plaintiff and defense cases during civil litigation and criminal matters.

Practitioners in California, Arizona, Texas, Pennsylvania, New Jersey and North California have retained my firm's technical services.

I am certified by The State Bar of California as a Provider of Approved Minimum Continuing Legal Education. My firm's accredited CLE curriculum and seminars entitled; "The High-Tech Universe of Litigation," and "Discovery in the High-Tech Legal Arena," offer lawyers and other legal professionals 1.00 to 4.00 credit hours in an advanced interactive forum.

In 2007, I accepted an appointment to serve on the Board of The American Guild of Court Videographers. At this writing, I continue to serve on the Board of the AGCV.

Wayne M. Cole, CSCV, CCVS, CLVI

Video production planning, shooting and editing; 3-D animation, digital video effects production; consulting, lecturing and writing on technical aspects of video production and post-production; legal video production including dynamic and photo metric analysis; contributing editor, Government Video Magazine; Certified Senior Court Videographer, Certified Legal Video Instructor, and member of the American Guild of Court Videographers Board of Advisors. I have qualified as an expert, and I have provided expert testimony in courts of law relative to complex audio and video evidence exhibits.

Prior to my legal video career, I was employed as a Software Systems Engineer. My responsibilities included; requirements analysis and definition, software systems design, code and test, software life cycle planning and management, customer interface, software development team management, commercial and military standards including NASA sfw series, MIL - STD-2167A, 490, 1553, 1750A and associated Data Item Description documents. I provided consulting services for 3-D and interactive simulations for space-based inertial measurement units and battlefield management systems.

While at Delco Systems Operations in Goleta, California I was an Assistant Software Architect. I coordinated the technical design effort and produced the definitive design document covering C-17 Mission Computer software subsystem integration and interface implementation to support multiple computer synchronization of

three multiprocessing, multi -tasking computers, each sharing two MIL-STD 1553 data buses. Additional responsibilities included designing, coordinating the development and update of a system model to aid in tacking design decision impacts on the Mission Computer software throughput and sizing. Included in this task was the development and provision of monthly reports to McDonnell Douglas and quarterly reports to the U.S. Air Force. Also, I coordinated the development and production of presentation materials for the C-17 Mission Computer System Software Design Review (SWDR). I was responsible for coordinating action item disposition and closure with the prime contractor, McDonnell Douglas Aircraft Corp., and the U.S. Air Force After the review was held.

From 1989 to 1990, I was a Senior Software Engineer with Astro Aerospace Corporation, located in Carpentaria, California. I was assigned to define the software requirements for the mechanization of the Space Station Freedom Program (SSFP) Mobile Transporter (MT) element, a robotic device used to carry payloads and other robotic manipulator systems about the space station truss structure. My responsibilities include producing the Software Requirements Specification and the Interface Requirements Documents in cooperation with McDonnell Douglas Space Systems Corporation (MDSSC), NASA, and the Canadian Space Agency. We were the sole source provider of the systems support to the MDSSC during the preliminary design phase of Ada program development for the MT

CSCI. Documentation produced in Interleaf on an Apollo workstation. Requirements analysis performed using Teamwork with Ada extensions, also on the Apollo.

During my tenure with Rockwell International Corporation, Kennedy Space Center, Florida, I was a member of the Technical Staff IV, Integration Console Complex Team Lead, and Ground Launch Sequencer Lead Engineer. I directed the activities of 16 engineers on a multi-contractor team located at Kennedy Space Center, Florida and Vandenberg Air Force Base, California for the design, code and integration of multi-subsystem software into a unified real-time software system for use in the Space Shuttle Launch Control Complex Firing Room. Coordinated and assisted in the development and operation of the Space Shuttle Ground Launch Sequencer software for the first ten Space Shuttle launches. All software work was done in Ground Operations Aerospace.

Disclosure

I, Michael L. Jones, Certified Court Video Specialist, No. 03121 with the firm Digital Evidence Legal Video Services disclosed the following:

On April 30, 2009, my firm was retained to conduct audio and video analysis relative to two (2) audio and video files contained on one (1) Compact Disc forwarded by Mr. Sidharth Pandey and Ndtv (the Client).

On May 4, 2009, I, Michael L. Jones received two (2) video discs from Mr. Sidharth Pandey and Ndtv containing audio and video files of Mr. Gandhi's memorialized public disclosure.

The first disc in the package contained one (1) TDK DVD-R, 1-16X 4.7 GB Disc housed in a TDK Jewel Case. As stipulated by the Client, the audio and video files contained on this particular disc were not utilized during the process of our examination.

The second disc in the package contained one (1) TDK Compact Disc, CS-R80, 700 MB 80-Min., Up to 52 X Speed, housed in a Sony 700 MB 1x-48X CD-R Jewel Case. As stipulated by the Client, our forensic analysis focused exclusively on the audio and video files contained on this particular disc.

Upon my cursory review of the evidence in question on May 5, 2009, I decided to enlist the services of my colleague, and fellow American Guild of Court Videographers board member, Mr. Wayne M. Cole to assist me with conducting the forensic examination. Mr. Cole and I have collaborated on several high-profile cases in Southern California over the past few years. Given the complexities of the evidence in question, I determined that it would be most appropriate to enlist Mr. Cole's expertise to successfully complete the scope of the assignment.

On May 6, 2009, Mr. Cole and I conducted the first phase of analyzing the audio and video evidence in question.

From May 6, 2009 to May 12, 2009, I, Michael L. Jones created and processed approximately twenty-eight (28) forensic still photographic exhibits. In addition, I created and rendered approximately six (6) forensic audio and video evidence exhibits. The forensic still photographic exhibits are memorialized on one (1) Compact Disc (CD) and contained in the Appendix of this report.

During our forensic analysis, Mr. Cole and I did not alter, modify, or enhance any of the Original material contained in the Original Compact Disc submitted to my firm for analysis. We did not utilize any of the elements on the DVD contained in the package forwarded to us by the Client. Hence, we did not alter, modify, or enhance any of the material contained on the DVD.

I, Michael L. Jones, do hereby certify that Mr. Wayne M. Cole and I are not related to any of the parties involved in this matter by blood or marriage, and we are in no way interested in the outcome of this matter.

Furthermore, I, Michael L. Jones do hereby certify that I authored the report contained herein.

IN WITNESS WHEREOF, I have hereunto set my hand this 14th day of May 2009.

Certified Court Video Specialist No. 03121

FORENSIC AUDIO AND VIDEO EVIDENCE ANALYSIS

Audio and Video Evidence Chain of Custody

- I. On May 4, 2009, the evidence in question was delivered via DHL courier services to Digital Evidence Legal Video Services. Michael L. Jones took custody of the package at approximately 7:00 PM.
- II. On May 5, 2009, at approximately 3:00 AM, the exterior packaging and the exteriors of the two (2) Discs contained inside of the package was photographed by Michael L. Jones (See Appendix I to view the first twelve (12) of twenty-eight (28) forensic photographic exhibits contained on the Compact Disc generated by Digital Evidence).
- III. The contents of the package included one (1) TDK DVD-R, 1-16X 4.7 GB Disc housed in a TDK Jewel Case, and one (1) TDK Compact Disc, CS-R80, 700 MB 80-Min., Up to 52X Speed, housed in a Sony 700 MB 1x-48X CD-R Jewel Case. Our forensic analysis was conducted on the TDK Compact Disc, CS-R80, 700 MB 80-Min, Up to 52X Speed - only.

IV. On May 6, 2009, Michael L. Jones and Wayne M. Cole begin the process of conducting forensic audio and video analysis on the evidence in question.

V. From May 4, 2009 to May 18, 2009, all audio and video evidence, including the forensic audio and video evidence exhibits, along with all of the forensic photographic evidence exhibits contained herein, remained in the sole custody of Michael L. Jones until shipped to Mr. Sidharth Pandey and Ndtv on May 18, 2009. The Original evidence in question and the contents relative to our forensic examination was packaged by Michael L. Jones and shipped to Mr. Sidharth Pandey and Ndtv via DHL courier services on May 18, 2009. All of the aforementioned material was released to the sole custody of Mr. Sidharth Pandey and Ndtv on May 18, 2009.

FORENSIC AUDIO AND VIDEO EVIDENCE ANALYSIS

Scope of Forensic Analysis

- I. The scope of our forensic analysis and the contents of this report are limited to determining whether the audio and video files containing the memorialized public address sequences of Mr. Varun Gandhi have been altered and or modified to distort the verbiage conveyed by Mr. Gandhi.
- II. The scope of our examination of the evidence in question and conclusions cited in this report is limited to the detection of inappropriate enhancement and or modification of two (2) audio and video files entitled "varun notice" and "varun notice 02" contained on the TDK Compact Disc that we received from Mr. Sidharth Pandey and Ndtv on May 4, 2009.
- III. The audio and video file entitled "varun notice" was recorded by a camera showcasing a frontal or $\frac{3}{4}$ view of Mr. Varun Gandhi delivering his public address.
- IV. The audio and video file entitled "varun notice 02" records and showcases a closer view of Mr. Gandhi delivering his public address from a second camera angle near the right side of the platform in which Mr. Gandhi delivered his address.

service date.	contracting Digital Evidence.
Amount Paid: \$3,500.00	
Due Date: N/A	
Digital Evidence: Tax I.D. # 13-4285958	
Amount Enclosed: N/A	

We appreciate Ndtv's patronage.

Please make all checks payable to: Digital Evidence Legal Video
Services.

CONTRACT FOR DISCOVERY SERVICES

In this Contract for Services (Agreement), the party who is contracting to receive services to as the "Client" and the party providing the services shall be referred to as the "Firm".

Whereas the Firm has a background relative to recording Video Depositions, producing Mediation Documentations, Day-in-the Life Documentaries, conducting Forensic Audio and Video Evidence Analysis. Audio and Video Evidence Enhancements, Site Inspections, providing Expert Testimony and other forms of litigation support services including but not limited to audio and video evidence exhibits and post-production services, the Firm is willing to provide services to the Client based on this background and the Client desirous to have services provided by the Firm.

Therefore, the parties agree as follows:

DESCRIPTION OF SERVICES: The Firm will provide the following services; (collectively the 'Services') (a) Video Record Depositions utilizing professional audio and video equipment. (b) Duplicate and deliver the Original recording(s) to the Client. (c) At the sole discretion of the Client and under the Client's direction and supervision, the Firm will add and duplicate portions of the evidence for presentation during mediation, or presentation in a court of law should the Client so desire. The finished product shall be delivered in

V. Also contained on the audio and video file entitled "varun notice 02" is a public address by Mr. Gandhi that appears to be conveyed during the night, evening, or in a dimly lit facility.

VI. In conclusion, the scope of our analysis is limited to Mr. Varun Gandhi's memorialized public address sequences. There are additional audio and video clips of other parties contained on the Disc files that are not germane to the scope of our assignment.