AUDIO FORENSIC CONTINUITY ANALYSIS REPORT

AFS Ref:	0011929/MA
Instructing Client	Mehmet Alaybeyoglu
Forensic Investigators	Mr Paul Baker
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Case file Reference:	Mehmet Alaybeyoglu

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1 Introduction

1.1 Purpose of this report

The aim of this report is to provide a detailed audio authenticity report in reference to the procedures performed in the analysis and to document all findings.

1.2 The audio forensic examiner

The audio forensic examiner and author of this report is Mr Paul Baker who is a qualified audio engineer and audio forensic specialist with over 27 years of professional experience in the audio and voice industry. Mr Paul Baker holds a City & Guilds in Engineering and gained his accreditation in audio engineering in 1986 at the Australian Audio College in Melbourne Australia. Mr Paul Baker has also studied voice and speech development with voice development coach Ms E.B. Guerra. Throughout his years of experience Mr Paul Baker has worked on a professional level within the audio production industry for TV networks, recording studios and on location recordings working with sound, the voice and acoustics. As joint business partner and founder of Audio Forensic Services his key roles over the past four years as business partner have included: audio expert, audio voice analysis, voice and speech acoustics, audio forensics analysis, dialogue deciphering, audio enhancement and audio transcriptions.

1.3 Audio Forensic Services

Audio Forensic Services are experts in the areas of audio forensics, voice forensics and audio production services. Based in the East Midlands of England, we offer an impartial, independent and specialised service to both defence and prosecution. We also adhere to a strict non-disclosure policy in relation to all case files worked on and abide by the APCO guide-lines and the Data Protection Act 1998.

1.4 Specific Instructions

Mr Paul Baker of Audio Forensic Services has been instructed by Mehmet Alaybeyoglu to determine the probability factor of whether the file titled: “Bu Bakara iyi makara! Egemen Bagis Tape Kaydi.wav” has indication of tampering or editing. The following media has been supplied for the analysis by Mehmet Alaybeyoglu and forwarded to our lab via the internet:

Audio file titled: “Bu Bakara iyi makara! Egemen Bagis Tape Kaydi.wav”
Duration of recording: 6 minutes and 25 seconds.

1.5 Equipment and Software used in the audio analysis process

Equipment used: Behringer Eurodesk MX 9000 48/24 channel mixing console, Beyer dynamic DT150 Headphones, Mackie MR8 MK2 studio speakers.
Computer: Windows 7 Professional 64 bit SP1 based operating system.
Audio analysis software: Sony Soundforge Pro version 11.0 (build 272) and iZotope RX 2 Advanced.

2 Audio Forensic Continuity Analysis
By Mr Paul Baker.

2.1 Detailed continuity analysis of the audio file titled: "Bu Bakara iyi makara! Egemen Bagis Tape Kaydi.wav".

The conversation on the said recording is in the Turkish Language between two male speakers and in the background a female speaker is audible.
The recording is a sample (copy) and not a proven master (original) recording of which has been received in a stereo digital format.

The following analysis was performed using Sony Soundforge Pro version 11.0 (build 272) with it's built in *Spectrum Analyser (see 3 appendices) And iZotope RX 2 Advanced built in *Spectrogram (see 3 appendices).

The recording was listened to in its entirety numerous times to determine continuity of background sounds or an indication of edits, firstly using the human trained ear and secondly analysing the recording for continuity through a spectrum analyser and spectrogram.
00:00:00 to 00:00:44: The first 44 seconds of this recording contains an introduction music sample of which immediately indicates that a post production of the sample recording has been performed and therefore indicates an initial questioning to its authenticity. This music has a fade in but an abrupt ending without any fade out.
00:00:44 to 00:00:44.442: This section contains recorded electrical cycle tonal frequencies beginning at 500Hz (Hertz) up to 4,000Hz in continuous steps of 500Hz (Fig1). This would be produced by a recording device. Also noted in this section is a start stop marker. In Fig1 the vertical band indicates artefact noise of the recording.

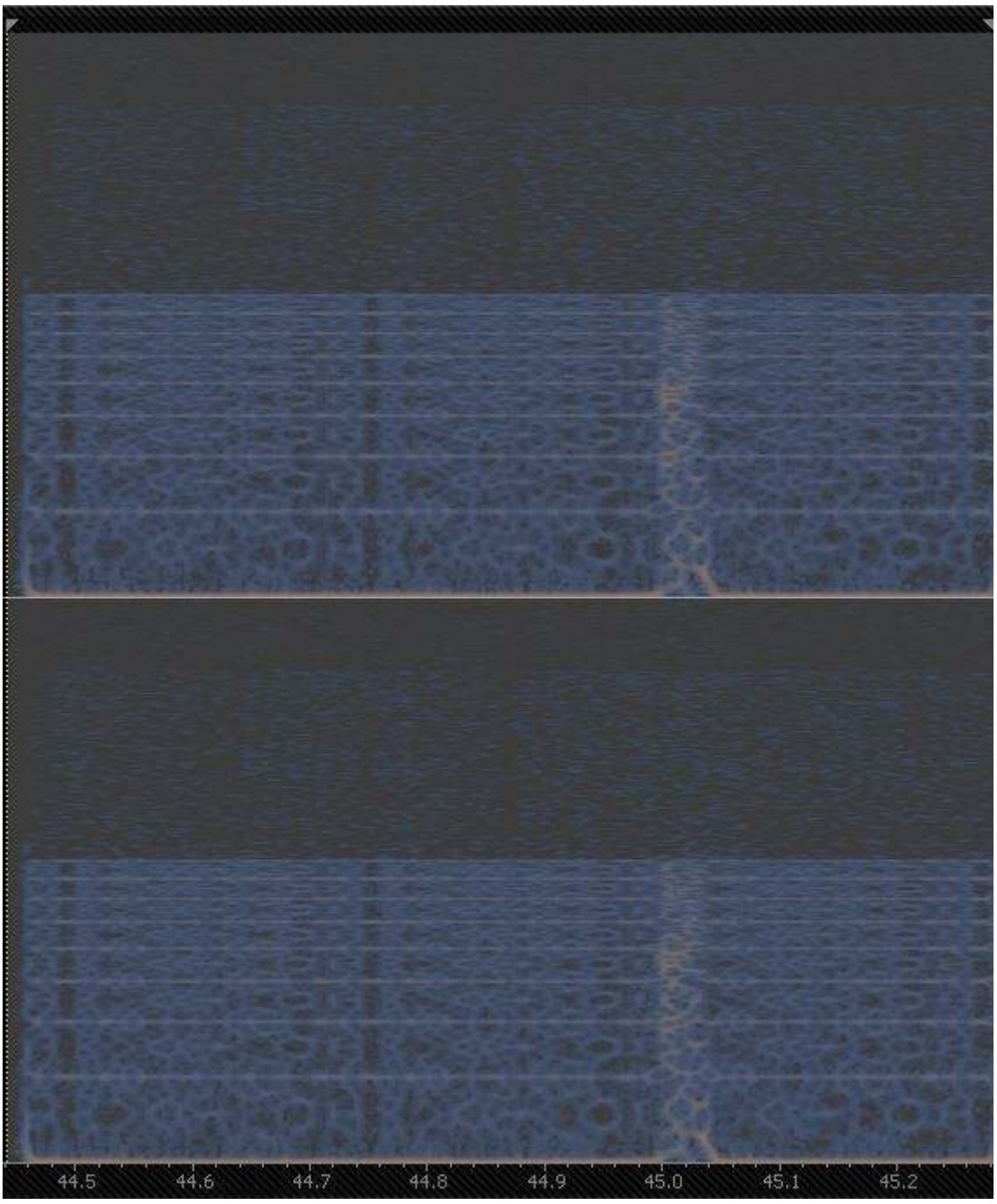

Fig1. ¦Start Stop Marker¦

00:02:19.400 to 00:02:19.700: A noticeable “audio flag (possible edit point)” (Fig2). Having viewed the section through a spectrum analyser and a spectrogram, the audio flag point indicates a reduction in recording level and a change in background sound. Also within this flagged section a digital sound artefact is present with a notable click sound immediately following the drop in background sound and digital artefact. As I am unable to examine the master recording my opinion of this audible flag is that it indicates a possible edit point. An examination of the master recording would clarify this probability.

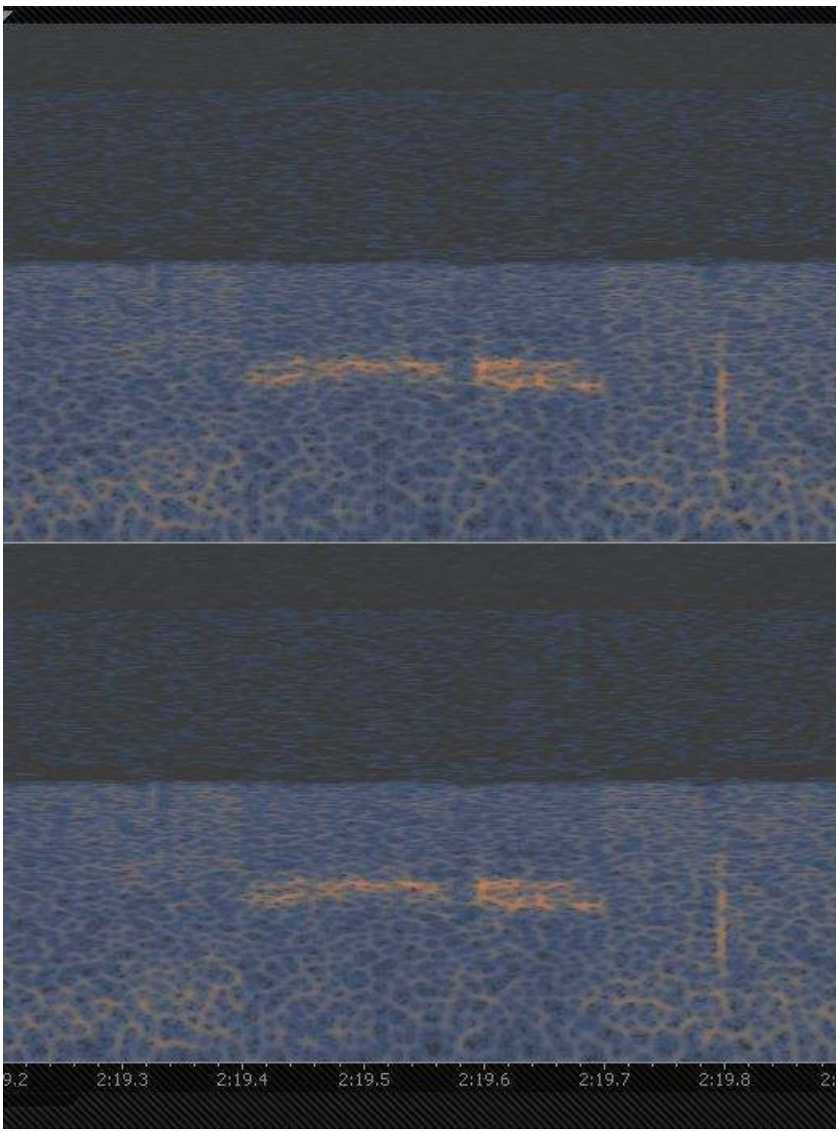

Fig2 ¦Audio Flag ¦Click Sound ¦

00:04:06.200 to 00:04:06.214: A noticeable audio flag (possible edit point) (Fig3). Having viewed the section through a spectrum analyser and a spectrogram, the audio flag point indicates a reduction in recording level and an extreme drop in background sound level. After this point the overall background sound increases in amplitude compared to the recording's background level prior to this audio flag. Once again as I am unable to examine the master recording, my opinion of this audio flag is that it indicates a possible edit point. An examination of the master recording would clarify this probability.

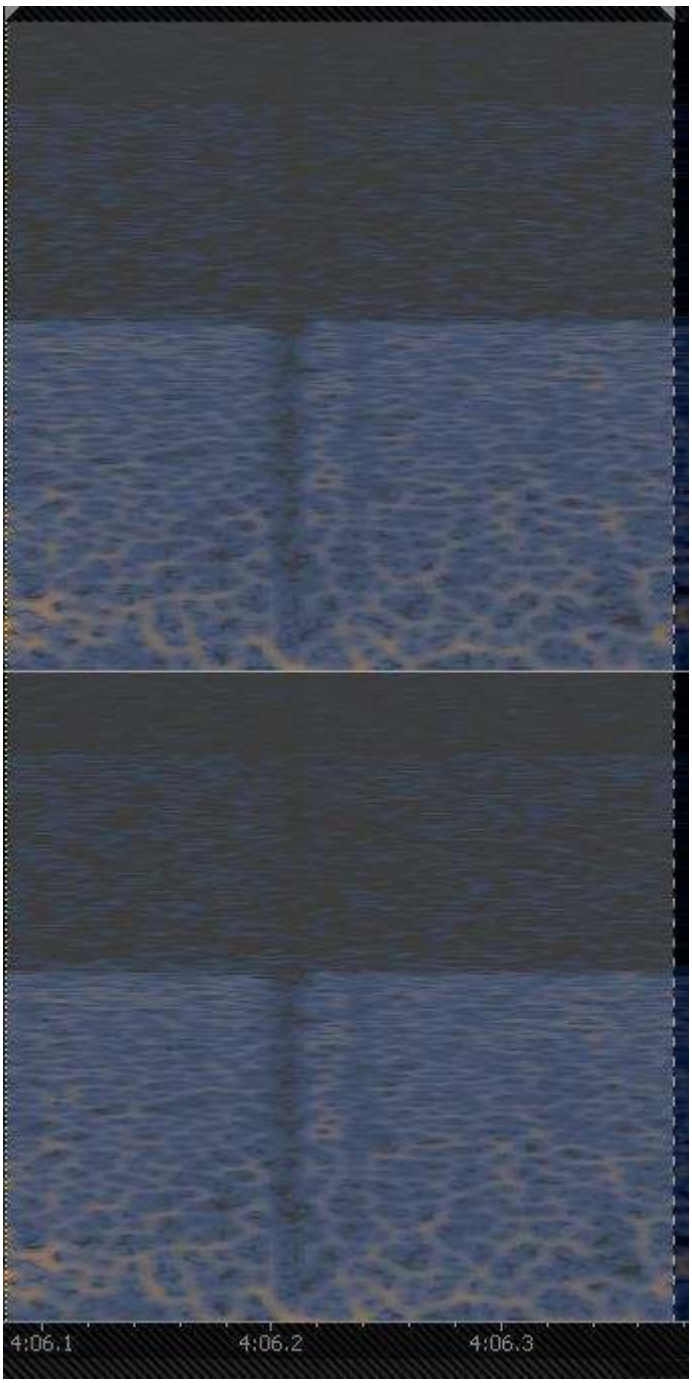

Fig3 ¦Audio Flag ¦

00:06:16: A noticeable audio flag (possible edit point) (Fig4). Having viewed the section through a spectrum analyser and a spectrogram, the audio flag point indicates an electronic click sound of which indicates a probability of an edit point as after this point the overall background sound increases and the frequency response levels of the two male speakers increase in amplitude compared to the recording's background level and speakers' levels prior to this audio flag. Once again as I am unable to examine the master recording my opinion of this audio flag is that it indicates a possible edit point. An examination of the master

recording would once again clarify this probability.

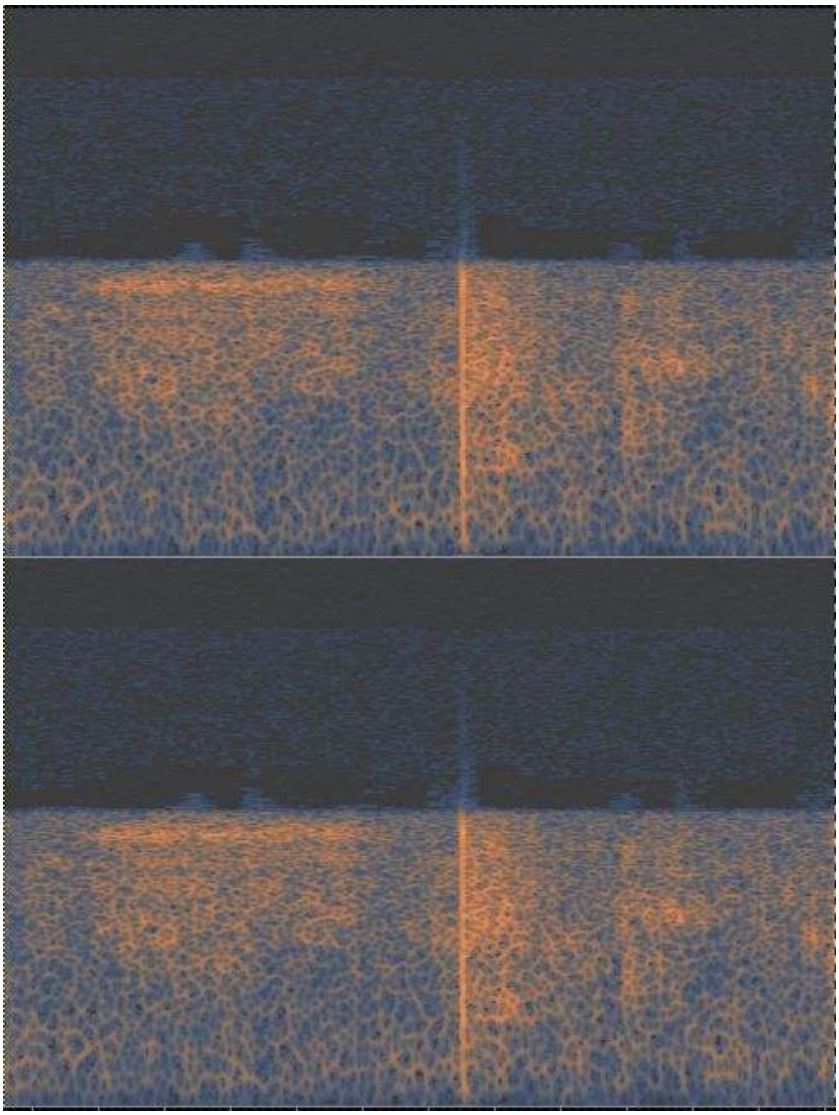

Fig4 ¦Audio Flag ¦

2.2 Test Results:

The analysis test results indicate three audio flags as noted in this report.
At this stage taking into consideration that the said recording is a copy and not a master recording, the results of this analysis indicate and lean towards a high probability of discontinuity due to music being inserted into the presentation audio file itself and due to the presence of the three audio flags of which indicate probable edit points or indicate a probability of tampering.
Analysing the audio file itself in its entirety, it is in my opinion that there is indication that a third party has put together this audio in a sequential arrangement for presentation. Having analysed the presented material and the overall presentation, I am of the opinion that the said sample has

been produced for presentation purposes. This leads to a question mark of authenticity.
The following scale is for the purpose of indicating the probability level of discontinuity verses continuity of a recording:

5) Very high Probability. (The probability of the said audio recording indicating discontinuity suggests a very high probability level).
4) High Probability. (The probability of the said audio recording indicating discontinuity suggests a high probability level).
3) High/Low Probability. (The probability of the said audio recording indicating discontinuity suggests a high/low probability level and a clear probability level cannot be obtained).
2) Low Probability. (The probability of the said audio recording indicating discontinuity suggests a low probability level).
1) Very Low Probability. (The probability of the said audio recording indicating discontinuity suggests a very low probability level).

I therefore am of the opinion that this said recording is indicating to be a 4 (four) on the above probability scale due to the audio flags found and the music insertion aspect. It must be taken into consideration however that this said recording is a copy/presentation from a master (original) recording and the master recording has not been submitted or presented for analysis. Therefore an examination of the master recording would be highly beneficial and would further clarify this probability rating.

Final Note:
All processes including this report was quality control checked by my colleague Ms Elaine Guerra, voice analyst and forensic transcriptionist.
End of report.

3 Appendices

3.1 Glossary of terms and terminology

Audio Wave Pattern: This shows the length, frequency and amplitude of a sound recording pattern.

Decibel (db): A decibel, or its abbreviation dB is a measurement of loudness that ranges from the threshold of hearing, 0dB.

Hertz: Hertz (Hz) simply means once per second. In audio terms, it is used to measure the frequency of a sound to characterise its pitch. A 100 Hz sound wave is a signal that repeats 100 times per second. Humans can normally hear sound between 20 Hz and 20,000 Hz.

Spectrogram: A spectrogram image could be described as an x-ray of a voice pattern or sound pattern.

Spectrum analyser: A spectrum analyser is a specific audio tool of which reads the decibels and frequencies of voice prints and sound patterns.

Voice Frequency: Pertains to the range of human speech including the vocal range. Voice frequencies can vary dramatically from one person to another.

Voice patterns: Vocal characteristics of an individual voice.