U.S. EQUAL EMPLOYMENT OPPORTUNITY COMMISSION
Washington Field Office
1131 M Street, N.E.
Washington, D.C. 20507

[redacted]	
Complainant	**EEOC No.** [redacted]
v.	**Agency No.** [redacted]
JEH JOHNSON, Secretary **U.S. Department of Homeland Security** **(U.S. Secret Service)**	**January 8, 2017**
Agency	

AFFIDAVIT OF [redacted]

I, [redacted] am an adult and am competent to testify to the matters herein at trial, hearing or other judicial or administrative proceeding.

1. I have a Bachelor of Science degree in Electrical Engineering from the [redacted].
2. I have a Master's of Science degree in Electrical Engineering from [redacted].
3. I have approximately 5 years of experience designing hardware and software to process acoustic data for the United States Navy as a contractor for the Naval Undersea Warfare Center (NUWC).
4. The United States Secret Service provided me three audio files of [redacted] polygraph examination for review:
    a. The file named "Audio_01" is 22 seconds long and contains an introduction about the examination to be performed in perfect clarity.
    b. The file named "Audio_02" is 2 hours and 7 minutes long and contains principally static and noise.
    c. The file named "Audio_03" is 1 hour and 17 minutes long and

contains principally static and noise.

5. The noise present in the Audio_02 and Audio_03 files is of such intensity that I was unable to resolve an audible recording using signal processing techniques such as Fourier Transforms and Notch Filtering.
6. Of note, the noise present in the Audio_02 and Audio_03 abates slightly only during periods of time that is innocuous with respect to challenging the validity of the polygraph examination. (The actual relevant exam questions are completely obfuscated in what appears to be random noise.)
7. I made inquiries to representatives of the Lafayette Instrument Company about how their software would perform recording the three audio files that were allegedly recorded during my polygraph examination.
8. I was provided an evaluation copy of the Lafayette Polygraph Software by the Lafayette Instrument Company.
9. The Lafayette Polygraph Software contains a mechanism to monitor recorded audio, in the form of a meter or indicator, which shows the decibel levels of recorded audio in real time.
10. The meter is rectangular and contains colored bars which displays the intensity level of the recorded audio. The meter rises and changes colors as the intensity level of the recorded audio increases and decreases.
11. Colors approximately correspond with decibel levels recorded in the following ranges:
    a. Red = -6dB to 0dB (loud)
    b. Yellow = -12dB to -6dB (loud conversation)
    c. Green = < -12dB (normal to quiet audio)
12. I have examined the spectrographs of the three audio files using multiple software tools.
13. The spectrograph of the Audio_01 file, is shown in Exhibit 1.
14. The spectrograph of the Audio_02 file, is shown in Exhibit 2.
15. The spectrograph of the Audio_03 file, is shown in Exhibit 3.
16. The Audio_01 recording is markedly different than both Audio_02 and Audio_03, and this is shown in Exhibit 1.2 where Audio_01 is superimposed over Audio_02, and in Exhibit 1.3 where Audio_01 is superimposed over Audio_03.
17. The audio indicator will behave markedly different between Audio_01 and

the other two audio files (Audio_02 and Audio_03.)

18. In a normal voice recording such as Audio_01, the meter will stay primarily green and "bounce" (move higher) and turn yellow during intense peak volumes of the conversation, and seldom if ever peak so high to turn red.
19. In recording Audio_02, the meter will stay yellow and red for prolonged periods and "bounce" between yellow and red, and is almost never green.
20. In recording Audio_02, the meter will exhibit significant time periods of full scale deflection, where it is at a maximum level and red, indicative of distortion. (Exhibit 2)
21. In recording Audio_03 the audio indicator will remain flat or nearly flat and green for the first 47 minutes of the recording. This would indicate nothing but background noise is being recorded. (Exhibit 3)
22. In minutes 48-1:17 of recording Audio_03, the meter will stay yellow and red for prolonged periods and "bounce" between yellow and red, and is almost never green. (Exhibit 3)
23. In minutes 48-1:17 of recording Audio_03, the meter will exhibit significant time periods of full scale deflection, where it is at a maximum level and red, indicative of distortion. (Exhibit 3)
24. If the microphone failed during this examination while capturing the "Audio_02" and "Audio_03" files, it would be an atypical microphone failure. Usually solid state devices either work (record properly), or do not work (record nothing.) Recording random noise at high decibel levels is an unusual microphone failure.
25. Recordings of non-random noise can occur with a microphone if there is a parasitic oscillation due to the placement of the microphone. These recordings are not indicative of a microphone with a parasitic oscillation. A parasitic oscillation is a periodic signal of fixed intensity.
26. The noise floor of a recording is the decibel intensity level when there is nothing being recorded but background ambient noise. Sound levels below the noise floor of a recording cannot be discerned in a recording because they are covered by the ambient background noise in the recording.
27. Recording "Audio_01" is a 22 second introduction which is a clear recording of the examiner's voice. The noise floor is between -18 dB and -

24 dB.

28. For the audio recording named “Audio_01”, the audio indicator in the Lafayette Polygraph Software will bob up and down in the green region. The audio indicator might briefly turn yellow during levels of peak intensity of the speaker’s voice, but it does not turn red during this recording.
29. Exhibit 1 shows the Waveform of the “Audio_01” recording, with the intensity in decibels on the Y-Axis and the time in seconds on the X-Axis. The decibel levels shown in the waveform correspond with the observations in Items 27 - 28.
30. Recording “Audio_02” is a 2 hour and 7 minute audio file which contains nothing except static and noise, with the exception of the period between 40:00 min to 58:00 min into the recording where an occasional word can be discerned.
31. On average, the noise floor of the “Audio_02” recording is between -6 dB and -9dB, markedly higher than the noise floor in the audio recording “Audio_01” in which conversation can be readily heard.
32. For “Audio_02”, the audio indicator behaved markedly different from “Audio_01”.
33. Because the noise floor of the "Audio_02" recording is between -6 dB and -9dB, the meter will remain yellow a majority of the time, which indicates an abnormal recording.
34. For "Audio_02", the audio indicator bobbed up and down between yellow and red, unlike the audio indicator’s behavior in “Audio_01”, where it stayed green during most of the recording.
35. Because background noises in “Audio_02” are so loud (often < -1dB), they would frequently maximize the audio level indicators during recording turning them red. This did not happen in “Audio_01”, where the recoding sound intensity level did not rise above -5dB.
36. For the 2 hour and 7 minute audio recording “Audio_02”, there would be many periods of significant duration (minutes) where the audio indicator would be maxed out (all bars lit) at a color of red.
37. The audio indicator briefly turned green during the period between 40:00 min to 58:00 min into “Audio_02”, but it was not green for a majority of

the time as would be the case in a normal audio recording such as file "Audio_01".

38. It would be evident to an examiner experienced with the Lafayette Polygraph Software that "Audio_02" was not properly recording the conversation between the polygraph examiner and Mr. [redacted]
39. An experienced examiner should realize there is a problem when the audio indicator shows a high-volume baseline response, which is yellow during most of the recording.
40. An experienced examiner would have noticed the audio meter spiking red for excessive periods when it should not, and that this, too, indicated a problem requiring the examiner to check the quality of the recording during the polygraph examination.
41. Exhibit 2 shows the Waveform of the "Audio_02" recording, with the intensity in decibels on the Y-Axis and the time in minutes on the X-Axis. The decibel levels shown in the waveform correspond with the observations in Items 30 - 40.
42. "Audio_03" is a 1 hour and 17 minute audio file which contains nothing except static and noise.
43. Recording "Audio_03" has two distinct regions in which the behavior of the recorded signal behave markedly different.
44. The first distinct region is the first 47 minutes of the recording.
45. The noise floor of the first distinct region of this recording is ~ -13dB, markedly higher than the noise floor in the normal audio recording "Audio_01", which is between -18 dB and -24 dB.
46. Because the audio recording sound levels in Audio_03 remain at a near constant -13dB for the first 47 minutes of the recording, the audio indicator did not move up and down at all.
47. For the first 47 minutes of this recording, the audio indicator remained a constant green and did not bob up and down at all.
48. The audio indicator response for the first distinct region of Audio_03 differed considerably compared to Audio_01.
49. An experienced examiner would have noticed the audio meter was flat for excessive periods when it should not, which indicated a problem requiring the examiner to check the quality of the recording during the polygraph

examination.

50. It would be evident to an examiner experienced with the Lafayette Polygraph Software that the audio indicator levels during the first 47 minutes of the Audio_03 recording indicated a problem and were different than that of a normal recording of a conversation occurring during a polygraph examination.
51. An experienced examiner would be concerned with the quality of a recording when the audio indicator shows a flat response with no movement.
52. An experienced examiner would have noticed the audio meter failing to move (or spike) at all, indicating that no recording was taking place.
53. The second distinct region of file “Audio_03” is from 48 minutes into the “Audio_03” recording until the end of the recording at 1 hour and 17 minutes.
54. On average, the noise floor of the second distinct region of the “Audio_03” recording is between -6 dB and -9dB, markedly higher than the noise floor in the normal audio recording in file “Audio_01”.
55. For the second distinct region of the “Audio_03” recording, the audio indicator behaved markedly different from the normal audio recording in “Audio_01”, and the first distinct region of recording “Audio_03”.
56. Because the noise floor of the second distinct region of the “Audio_03” recording is between -6 dB and -9dB, the meter will remain yellow a majority of the time, which is indicative of an abnormal recording.
57. For the second distinct region of the “Audio_03” recording, the audio indicator bobbed up and down between yellow and red, unlike the audio indicator’s behavior in the normal recording “Audio_01”, where it stayed green and peaked into yellow. Additionally, the behavior of the audio indicator differed drastically from the first distinct region of “Audio_03”, where the meter stayed a constant green color and did not move at all.
58. Because the noises recorded in the second distinct region of the “Audio_03” recording are so loud (often < -1dB), they would frequently maximize the audio level indicators during the recording turning them red. This did not happen in audio file “Audio_01”, where the recoding sound intensity level does not rise above -5dB.

59. For the second distinct region of the “Audio_03” recording which has a duration of about 30 minutes, there are many periods of significant duration (minutes) where the audio indicator would be maxed out (all bars lit) at a color of red.
60. It would be evident to an examiner experienced with the Lafayette Polygraph Software that the audio indicator levels in the second distinct region of the “Audio_03” recording were markedly different than that of a normal recording of a conversation occurring during a polygraph examination such as the recording in the “Audio_01” file.
61. An experienced examiner should be concerned with a recording when the audio indicator shows a high volume baseline response which is yellow during most of the recording.
62. An experienced examiner would have noticed the audio meter spiking red for excessive periods when it should not during the second distinct region of the “Audio_03” recording, and that would indicate to the examiner to check the quality of the recording.
63. An experienced examiner would have several clues that when recording “Audio_03” the recorded audio was compromised. (Exhibit 3)
    a. The first and second distinct regions of the “Audio_03” recording are markedly different from one and other, and would have shown grossly different reading on the audio indicator in the Lafayette Polygraph Software.
    b. The first and second distinct regions of the “Audio_03” recording are unique and markedly different from a normal audio recording of a conversation such as that which was recorded in the “Audio_01” file at the beginning of the exam.
    c. The first distinct region of the “Audio_03” recording would produce no discernable movement on the audio indicator to indicate anything was being recorded at all.
    d. The second distinct region of the “Audio_03” recording would produce excessively high readings on the audio indicator indicative of distortion.
64. Exhibit 3 shows the Waveform of the “Audio_03” recording, with the intensity in decibels on the Y-Axis and the time in minutes on the X-Axis.

The decibel levels shown in the waveform correspond with the observations in Items 42 - 63.d.

65. Given the behavior of the audio indicator built into the Lafayette Polygraph Software, and the "Warn on low audio" functionality built into the software, it is virtually impossible that an examiner would not know that a useable recording was not being made.
66. This is especially true for "Audio_03" recording where the audio indicator will remain flat or nearly flat for the first 47 minutes of the recording.
67. This is further illustrated in Exhibit 1.2, which is an overlay of the normal audio recorded in file "Audio_01" over the distorted audio recorded in file "Audio_02"; and while the time axis (X-Axis) may differ, the intensity axis (Y-Axis) is of the same units, and it is readily apparent that the peaks of distorted "Audio_02" are much greater than that of "Audio_01". An experienced examiner would have readily noticed this on the audio indicator.
68. This is further illustrated in Exhibit 1.3, which is an overlay of the normal audio recorded in file "Audio_01" over the distorted audio recorded in file "Audio_03"; and while the time axis (X-Axis) may differ, the intensity axis (Y-Axis) is of the same units, and it is readily apparent that the peaks of distorted "Audio_03" are much greater than that of "Audio_01". An experienced examiner would have readily noticed this on the audio indicator.

I HEREBY AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE STATEMENTS CONTAINED HERIN ARE TRUE AND ACCURATE.

/s/ [redacted] 1/8/2017

_____ _____

[redacted] Date

List of Exhibits

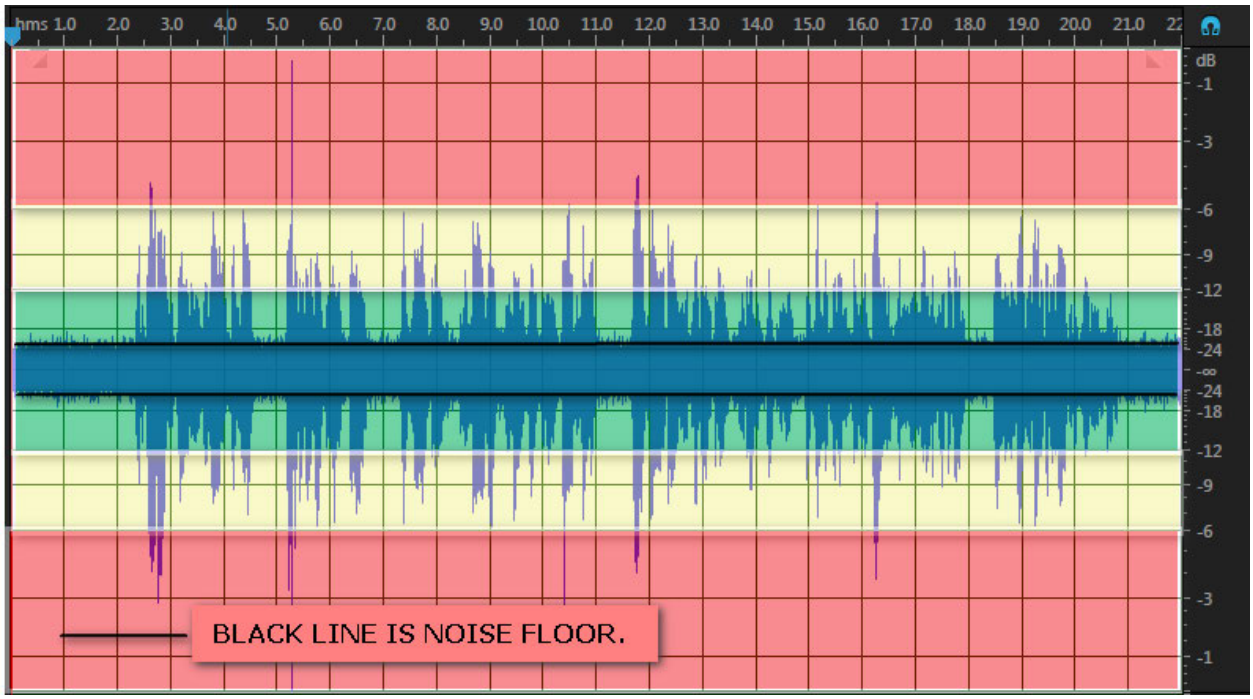

Exhibit 1: Normal Audio Recording Spectrograph, Peak Determines Meter Color.

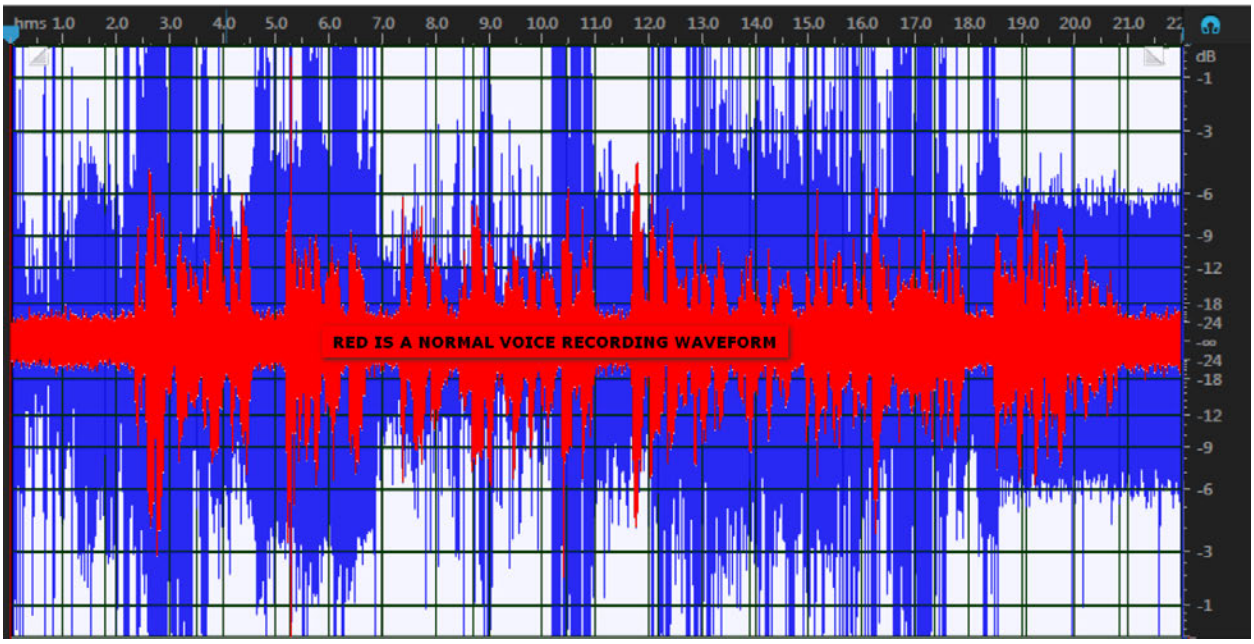

Exhibit 1.2: Normal Audio_01 (Red) Superimposed on Noise Audio_2.

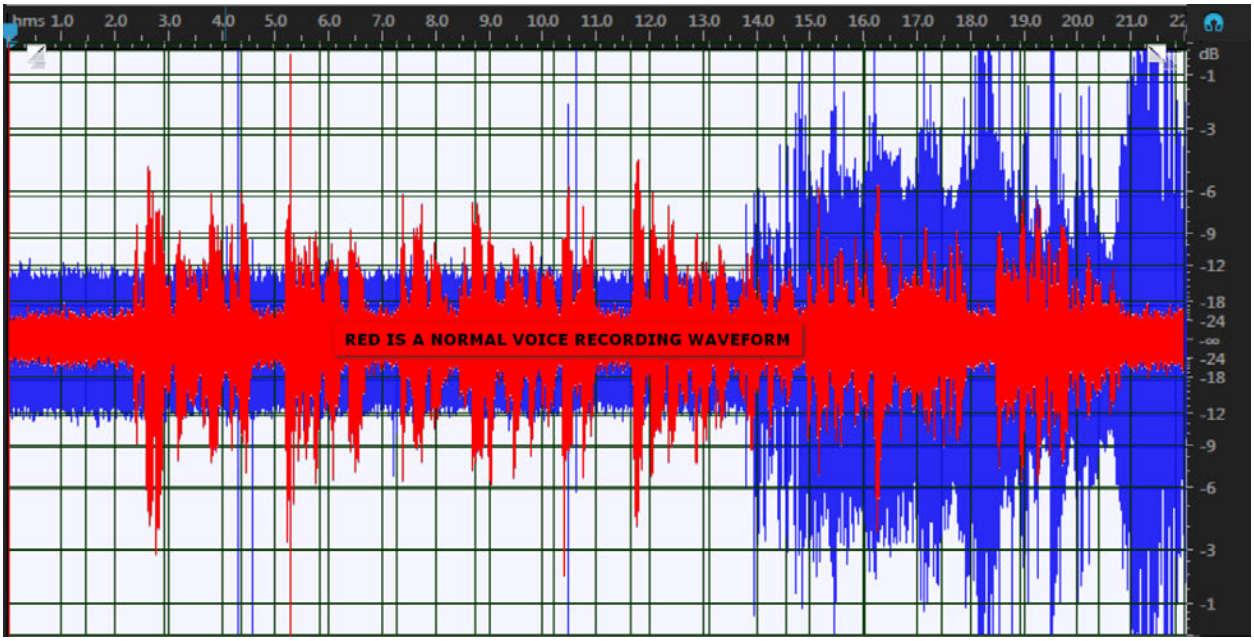

Exhibit 1.3: Normal Audio_01 (Red) Superimposed on Noise Audio_3.

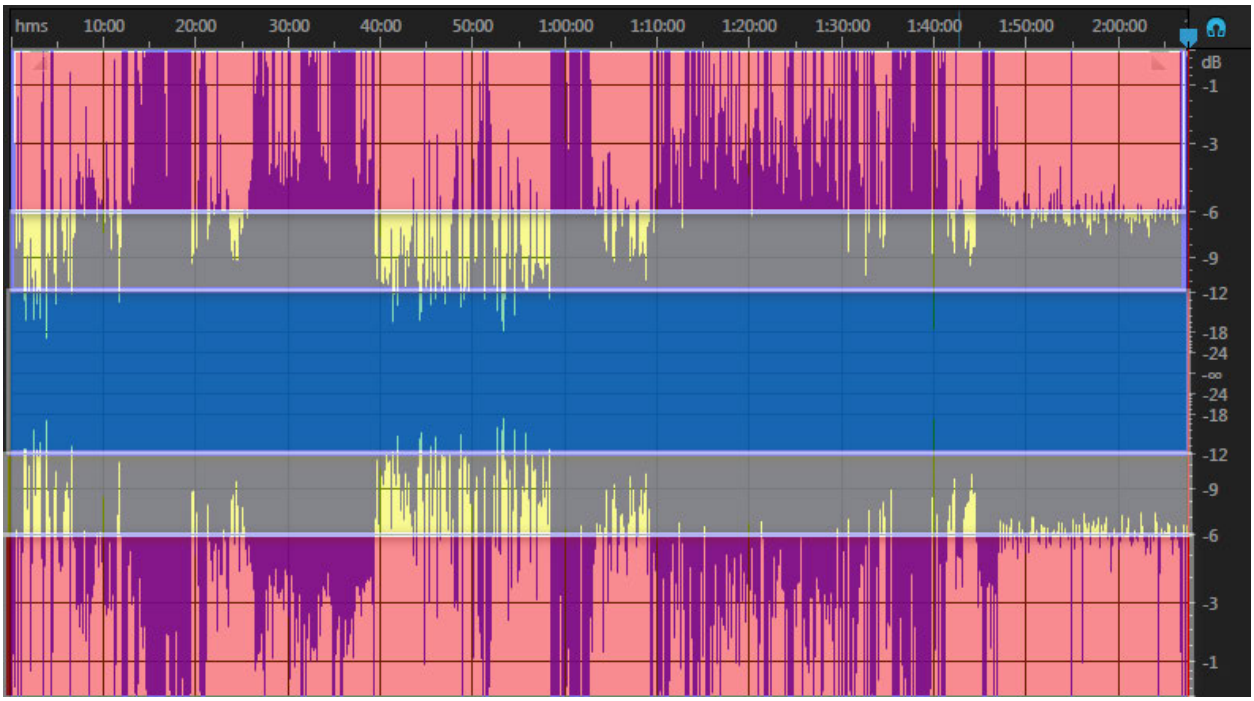

Exhibit 2: Audio_02 Recording Spectrograph Noise & Static, Peak Determines Meter Color.

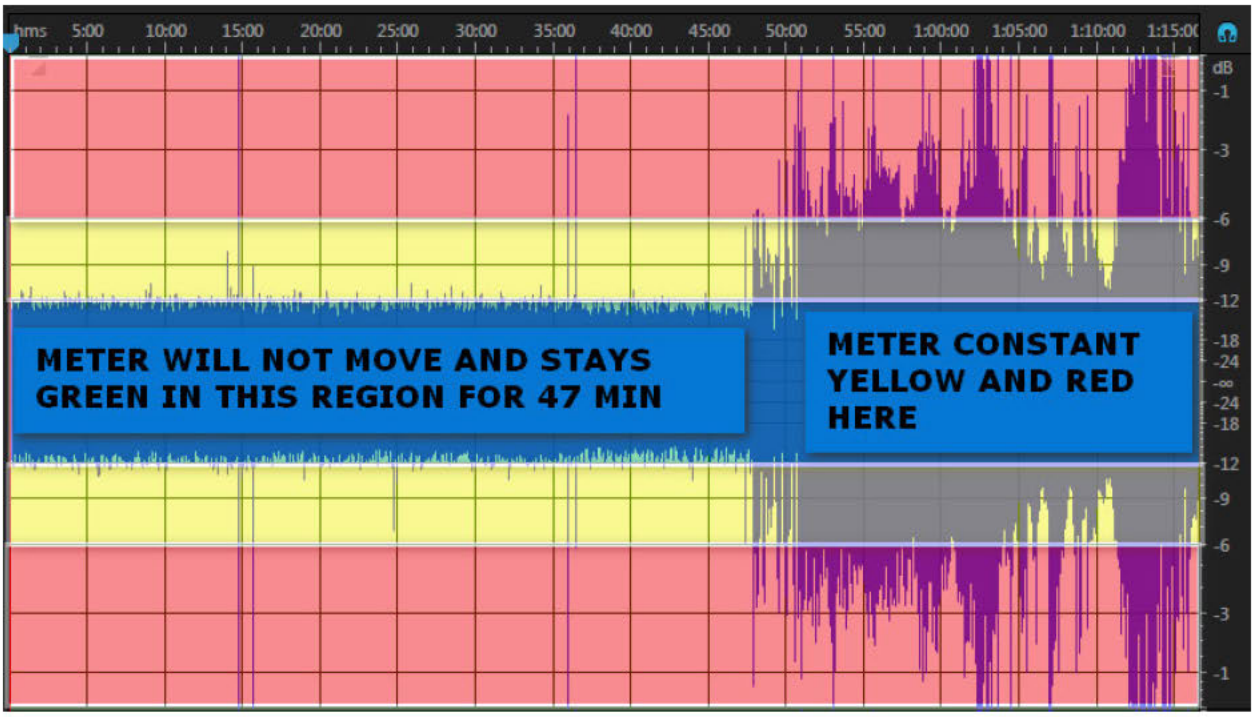

Exhibit 3: Audio_03 Recording Spectrograph Noise & Static, Peak Determines Meter Color.

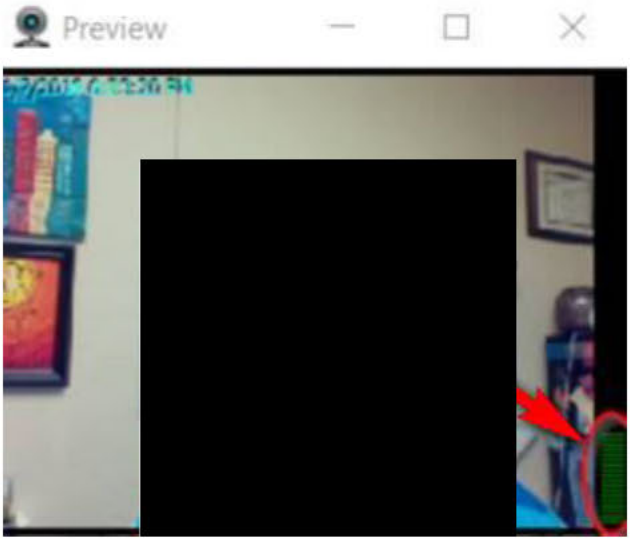

Exhibit 4: Audio Indicator in Lafayette Software.