ANALYSIS AND COMMENTS
RE: THE DALLAS POLICE TAPES ET AL
RESPECTFULLY SUBMITTED TO THE SELECT COMMITTEE ON ASSASSINATIONS U.S. HOUSE OF REPRESENTATIVES
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WASHINGTON, DC.
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HAROLD E. FORD, TENN. FLOYD J. FITHIAN, IND.
ROBERT H. EDGAR, PA.
JFK EXHIBIT F-680 cont.
December 13, 1978
Mr. Gary Cornwell, et al
Select Committee on Assassinations
U.S. House of Representatives
5369 House Office Building, Annex 2
Washington, D.C. 20515

RE:ACOUSTICAL STUDY OF DALLAS POLICE TAPES BACKGROUND

In the course of its investigation into the assassination of President John F. Kennedy, the Select Committee on Assassinations has determined that during a period of approximately five minutes on November 22, 1963 a Dallas, Texas, police motorcycle transmitter, operating on police Channel #1, had its transmitter keyed continuously on; that this five minute period was probably a coincident with the time of the assassination; and that Channel #1 transmissions were continuously recorded on a dictabelt at Dallas police headquarters. The possiblity was considered that this motorcycle may have been part of the presidential motorcade and, if so, it may have transmitted the sounds of the shots, thereby allowing a resolution of the conflicting testimony concerning the number of shots which were fired.

It should be noted, however, that the motorcade was operating on Channel #2, which channel was implimented specifically for

the motorcade on associated police vehicles. Channel was maintained for normal Dallas police communications traffic. While it would appear unlikely that a vehicle that was a part of the motorcade would be on other than the motorcade channel, the possiblity of an error in channel selection,, apparently was sufficient to warrant further investigation.

BASIS FOR MY INVESTIGATION

Upon learning by means of the news media of the possiblity that the shots were recorded, I was desirous of determining at the earliest possible moment whether there had, in fact, been more than three shots, since I had never been completely satisfied with the Warren Commission Report in this regard. My company, Voice Interpretation & Analysis, Ltd., is equipped with the instrumentation and equipment which would probably have been required for such a determination

- The following is a description of the equipment used:
A Hewlett-Packard 9845A Computer interfaced to the following electronic equipment:
An Analogic Computer Data Conversion System (analog to digital converter).
A Nicolet Scientific Corporation 444A Miniubiquitous FFT Computing Spectrum Analyzer.
A 9872A Digital Plotter. (Software for adaptive filtering, FFT, and additional necessary algorithms also programmed.) 5587 Bruel and Kjaer Frequency Spectrum Shaper Type 5587 (analog).
A Rockwell International Automatic Digital Audio Processor (Digital Adaptive Predictive Deconvolver and Adaptive Filter).
A Voice Identification Incorporated Series 700 Analog Frequency Spectrograph.
Along with a laboratory filled with additional supportive electronic, optical scientific testing equipment, and magnetic tape recording equipment, which can be additionally listed if necessary.

PREDICATION

I obtained from Mary Ferrell of Dallas, Texas, a taped copy of the Channel #1 dictabelt (which was formerly in the hands of The Committee and subsequently returned to Mary Ferrell). My initial approach was similar to that being followed by Bolt, Beranek & Newman (BB&N).in their initial test, in that I subjected the tape to various combinations of adapted filtering, analog filtering, and fast fourier transform spectrum analysis to attempt to detect events which could have been shots. This approach was unsuccessful. (This, apparently was unremarkable, since BB&N subsequently reported that they were unable to detect such events from this taped copy, although the), report the presence of events which could be shots on another taped copy.)

My second approach was that of studying the taped contents for the purpose of applying deduction analysis. This approach ultimately involved investigation in addition to the analysis of this tape.

ANALYSIS

The first significant finding involved the sound of the motorcade sirens on the Channel #1 tape. If the motorcycle with the open microphone had been with the motorcade, it would be expected that the sirens' sound would have started at full volume and, if the motorcycle had continued with the motorcade, would have continued for the trip to Parkland Hospital. On the other hand, if the motorcycle had remained at Dealey Plaza, the sounds would have started at full volume and the volume would have decreased as the motorcade pulled away. The sounds of the sirens on the tape, however, seem to increase, peak, and decrease, as if they were approaching, passing, and leaving the open microphone position. While this observation is admittedly somewhat subjective, if true it would indicate that the motorcycle was not with the motorcade, but was at some point along or near the route taken by the motorcade on its way to the Parkland Hospital.

The second significant finding also involved the sound of the sirens. In this case, the important factor was when they occurred. While it becomes obvious that the time designations provided by the Channel #1 dispatcher may not be completely accurate, an analysis of these time designations puts the beginning of the sounds of the sirens somewhere in the vicinity of 12:55; i.e., 2 or 5 minutes after the presumed time of the shots. Since it would be expected that the sirens would have been turned on as the motorcade began to rush away from the Dealey Plaza, or, in other words, a few seconds after the shots, the earliest acquisition of the siren sounds by the open microphone, two to three minutes later, again indicate that the motorcycle was along the route to Parkland Hospital, rather than a part of the motorcade.

In order to resolve the question of when the sirens were turned on, I contacted Chief Curry, who was the senior police officier in charge of the motorcade. Chief Curry informed me that immediately after the shots were fired, transmitted (on Channel #2, motorcade channel) the statement that they were preceding to the hospital and that the sirens were turned on immediately. While there seems to be little reason to doubt Chief Curry's recollection, since it could be opined that in the excitment of the moment, none of the vehicles proceding to Parkland Hospital had their sirens turned on until later, I procured the tape of the Channel broadcasts to determine if the sirens could be heard during any of the motorcade broadcasts. From this tape it was determined that Chief Curry broadcasted twice that they were proceding to the hospital. The first transmission did not identify the hospital. A few seconds after the first transmission he rebroadcasted, identifying the hospital as Parkland. The sirens can be heard in both broadcasts and can be heard in subsequent broadcasts. The sirens are more clearly discernable at the beginning of the the first broadcast. For this transmission Chief Curry keyed his microphone and paused for a moment before he talked. This allowed the sounds of the sirens to come through with significant volume. When he yelled into the microphone, the relative level of his voice was higher at the microphone than was the sound of the sirens. The automatic gain control circuit in the transmitter then adjusted the audio gain in the accordance with the highest sound level received and, thereby, reduced the preceived level of the sirens. In the second transmission, the sirens are faint because Chief Curry vocalized immediately, after keying the transmitter.) At this

point, I had determined that the sound of the sirens had begun within a few seconds of the shots, as stated by Chief Curry and confirmed by the sounds from the Channel #2 tape. If the motorcycle with the open microphone had been a part of the motorcade it would have transmitted the sounds of the sirens immediately. I had determined, further, that the sounds of the sirens were first audible in the open microphone transmission 2 or 3 minutes later than the presumed time of the shots, meaning, if the presumption of the time of the shots is correct, that the motorcycle with the open microphone on Channel #1 was located at or near the point where the motorcycle would be approximately 2 minutes after they had departed Dealey Plaza for Parkland Hospital. It is now necessary to deal with the presumption of the time the shots occurred.

From previous testimony, it has been established that the Channel #1 dispatcher read from one clock; that the Channel #2 dispatcher read from a second clock; that the clocks were analog (i.e., time is displayed by continous movement of hour and minute hands); that they are synchronized once a month; and that the two clocks may differ by as much as a minute. Channel #1 taping was continuous; Channel #2 taping was initiated by an incoming or outgoing transmission and terminated following the end of the transmission. Thus, events which are not timed designated can be timed from a timed designation on Channel #1, but similar undesignated events on Channel #2 cannot be timed from a timed designated event, unless it can be shown that the transmissions are sufficiently, continuous that the recorder remains in continuous operation. Additionally it must be considered thatdifferent dispatchers may use a slightly different system for determining the minutes which will be designated. For example, one dispatcher may consider that 12:20 will not be called until the minute hand has reached 20 and at all times will be designated 12:20 until the minute hand reaches 21.Another dispatcher may consider that when the half minutehas arrived, the call will be for the next whole minute.In this case the dispatcher would designate 12:20 from 12:19 and 30 seconds until 12:20 and 30 seconds. In attempting to identify the relationship between thetime of the shots and other significant events, it is necessary to determine the time of the events on Channel #1 by, Channel #1 time, the time of the events on Channel #2 by Channel #2 time, and the correlation between Channel #1 time and Channel #2 time, since there are no events on Channel #1 which pin point the time of the shots. The most significant event on Channel #2 is Chief Currys' call that they are preceding to the hospital, since this is known to have occurred a few seconds after the shots. The beginning of the sounds of sirens on Channel #1 is a significant event, as previously discussed. Also significant is the sound of a carillon type bell on Channel #1, since this allows determination of the time interval between the 10 second period considered by BB&N to contain the impluses which may represent the sound of the shots and the beginning of the sound of the sirens. In order to establish a base time for Channel #1, time designations by Channel #1 dispatcher of 12:26, 12:27, a second 12:27, and 12:28 are used. Considering the two approaches, previously discussed, to designating the time and the intervals between the calls, the following matrix results:

SEE THE CHART DISPLAYED IN FIGURE 1 ON THE FOLLOWING PAGE.

The dispatcher reported time is designated on lines 1 through 4. The interval is at interval timed from the tape between the

dispatcher reported times. Columns A and B assume that the dispatcher changes his designation on the half minute and columns C and D assume that the dispatcher changes his designation on the even minute.

Starting with line #1, the dispatchers called designation is 12:26. This causes column A to be 12:25::30 and and column B to be 12:26::29. For the designation change on the minute, column C is 12:26::00 and column D is 12:26::59. The subsequent entries in columns A through D are arrived at by adding the measured interval to the line one times. Thus, if the dispatcher called 12:26 at 12:25::30, as designated in column A as the earliest Channel #1 clock time when the designation could have been made, then the line #2 time, occurring 20 measured seconds later must be 12:25::50 and line #3, 18 seconds later, must be 12:26::08, and so forth.

In examining to see whether the three designated times could have been called times indicated in the four lettered columns, we can exclude column A times, since 12:27 (line #2 would not have been called at 12:25::50; 12:27 (line #3 would not have been called at 12:26::08; and 12:28 (line #4) would not have been called at 12:26::30.

Column B is marginally acceptable. 12:26::49 would be called 12:27 (line #2); 12:27::07 would be called 12:27 (line #3); and 12:27::29 could be called 12:28 (line #4).

Column C is not acceptable, since, under the system represented by column C and D, 12:26::20 would not be called 12:27 (line #2); 12:26::38 would not be called 12:27 (line #3) and 12:27::00 would not be called 12:28 (line #4) Column D is marginally acceptable under this system, since 12:27::19 would be called 12:27 (line #2); 12:27::37 would be called 12:27 (line #3); and 12:27::59 could be called 12:28 (line #4). We can now locate either of these times within a 30 second period to Channel #1 clock time and can, and therefore, measure the time intervals from either of these 4 events to any other event on the Channel #1 tape and, thereby, locate these other events within 30 seconds of the Channel #1 clock time.

Using the 12:26 designation, we have determined that. the transmission occurred between 12:26::29 and 12:26::59. The measured time for this event to the bell is 4 minutes and 15 seconds and to the beginning of the sirens and 2 seconds.

According to BB&N, the first impluse, which they considered may represent a shot, occurred 16 seconds before the sound of the bell and the last impluse, which they sidered may represent a shot, occurred 6 seconds before the sound of the bell.

The chart in Figure 2 on the following page lists these events in the time period in which they occurred. It is interesting to note that BB&N, using Least Square Analysis, a refined averaging process, computed thetime of the first possible shot impluse as occurring at 12:30::47, Channel #1 clock time. My range for the same point is 12:30::38 to 12:31::08, with a mean (average) of

12:30::53. Since we differ by only 6 seconds for our averages, our results are mutually supportive. An interim conclusion may be made at this point:

- a. If the motorcycle with the open microphone were a part of the motorcade, it would have picked up the sounds of the sirens as soon as they began.
- b. The sirens began a few seconds after the shooting.
- c. The open microphone produced the taped sound of the siren at approximately 12:32::46 (plus or minus iS seconds), Channel #1 clock time.
- d. Therefore, if the motorcycle were in the motorcade, the shots occurred a few seconds before 12:32::46. Since BB&N analyzed the 10 second section starting at approximately 12:30::$3, Channel #1 clock time, almost 2 minutes before the shots would have been fired, it may be stated definitively that any impluses detected during that 10 second period were not the result of shots recorded by the open microphone. Of course, if the motorcycle were not within the motorcade, it did not record shots at any time.

I will return now to the primary problem of determining if the motorcycle open microphone could have transmitted the sound of the shots at any time (i.e., if the motorcycle were with the motorcade when it was in Dealey Plaza).

BB&N has determined by Least Square Analysis of transmissions giving time designations on Channel #2 that the approximate time of the assassination was 12:30 and 12 seconds, Channel #2 time. Since this conclusion was arrived at based upon essentially continuous running of the Channel #2 recorder, it would seem to be a reasonably accurate estimate. Accepting it, for the moment, as accurate and allowing a worst side error between Channel #l and Channel #2 of l minute in either direction, the time of the assassination by the Channel #1 clock would be between 12:29:12 and 12:31::12. Allowing 10 seconds between the time of the assassination and the time the sirens were turned on and Chief Curry made his call, the latest the sirens could have started, by Channel #1 clock time would have been 12:31::22. If the motorcycle with the open microphone were with the motorcade, we would hear the sound of the sirenson the Channel #1 tape at that time, instead of between 12:32::31 and 12:33::01. In other words, the Channel #1 and Channel #2 clocks would have to be a full minute apart and the Least Square Analysis would have to be a minute to a minute and a half in error over a 6 minute analysis, and both events cumulative (in the same direction). Since this seems inconceivable, it is concluded that there is almost no possiblity that the motorcycle was with the motorcade.

Since this conclusion cannot be stated quite as decisively, based upon the time elements, as the previous interim conclusion, the following supportive evidence is provided.

- a. The open microphone was on Channel #1, the normal police channel. The motorcade vehicles were on Channel #2, the

special motorcade channel. If the motorcycle with the open microphone were with the motorcade, the transmission should have been on Channel #2.

- b. The sound of the sirens on the Channel tape increases in volume and then fades out as would be expected if the motorcade were approaching, passing, and leaving the location of the open microphone.
- c. The sound of the bell on the Channel tape requires that a bell be located with an acoustical range of the open microphone. There was no such bell in or near Dealey Plaza. While it has not been identified as the same bell, there was a bell in the tower of the Lucas Baptist Church, 4435 Rosewood (near the intersection of Lucas and Rosewood), Dallas, Texas, located 0.6 miles from the position of the designation of a three wheel motorcycle on traffic control duty on the Stemmons overpass over Industrial Boulevard.
- d. Several three wheel motorcycles were positioned in or around the Trade Mart and specifically in the area of the Stemmons Expressway and Industrial. One motorcycle officer has stated to me unequivocally that he was assigned and was specifically at the Stemmons and Industrial overpass and saw the motorcade traveling towards him, and away from him, going towards Hines Boulevard, as they were heading towards Parkland Hospital. He also stated to me that it is quite possible that it could have been his microphone keyed as he had several problems with his radio of the same nature in the past.
- e. The following transcript is of a transmission I located on Channel #2 and recorded on the tape recording included with this report for your review.

DISPATCH: 15 CAR 2:
15 CAR 2: 15 Car 2:
DISPATCH: There is a motorcycle officer up on Stemmons with his mike stuck open on Channel #1. Could you send someone up there to tell him to shut it off?
15 CAR 2:10-4
DISPATCH:12:34

CONCLUSION

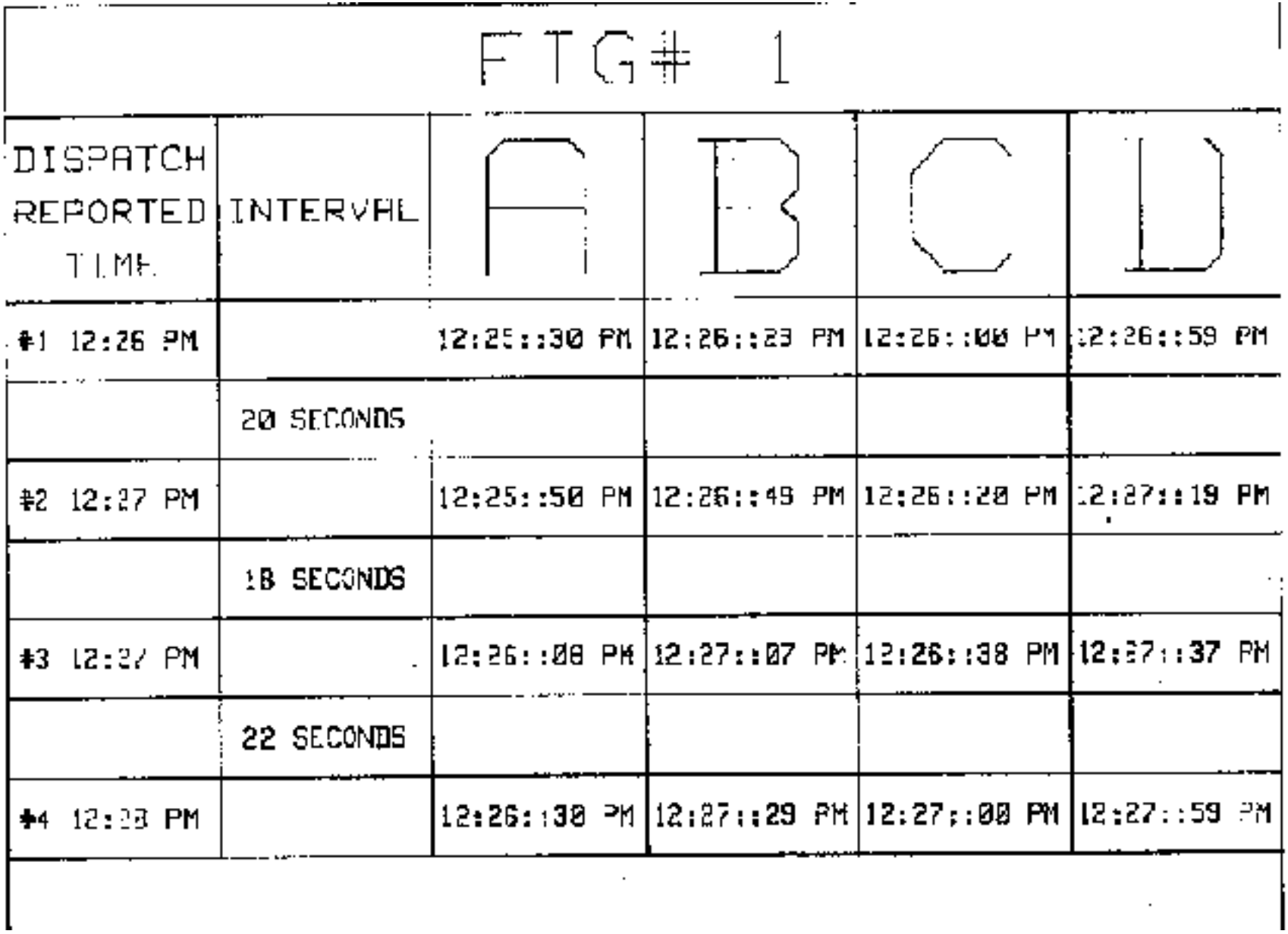
A. It is concluded that the noise impluses detected during the period immediately preceding the sound of the bell were not shots.

B. It is concluded that the motorcycle with the open microphone on Channel #1 was not a part of the motorcade, but was in fact, located along the route of the motorcade from Dealey Plaza to Parkland Hospital. Additional information regarding my acoustical analysis, my investigative analysis,' and my further investigation as to the location and identity of the keyed open microphone and spectrum analysis of the bell located at the Lucas Baptist Church, and questions for Dr. Barger (regarding his

analysis et al), would be supplied upon an additional request.

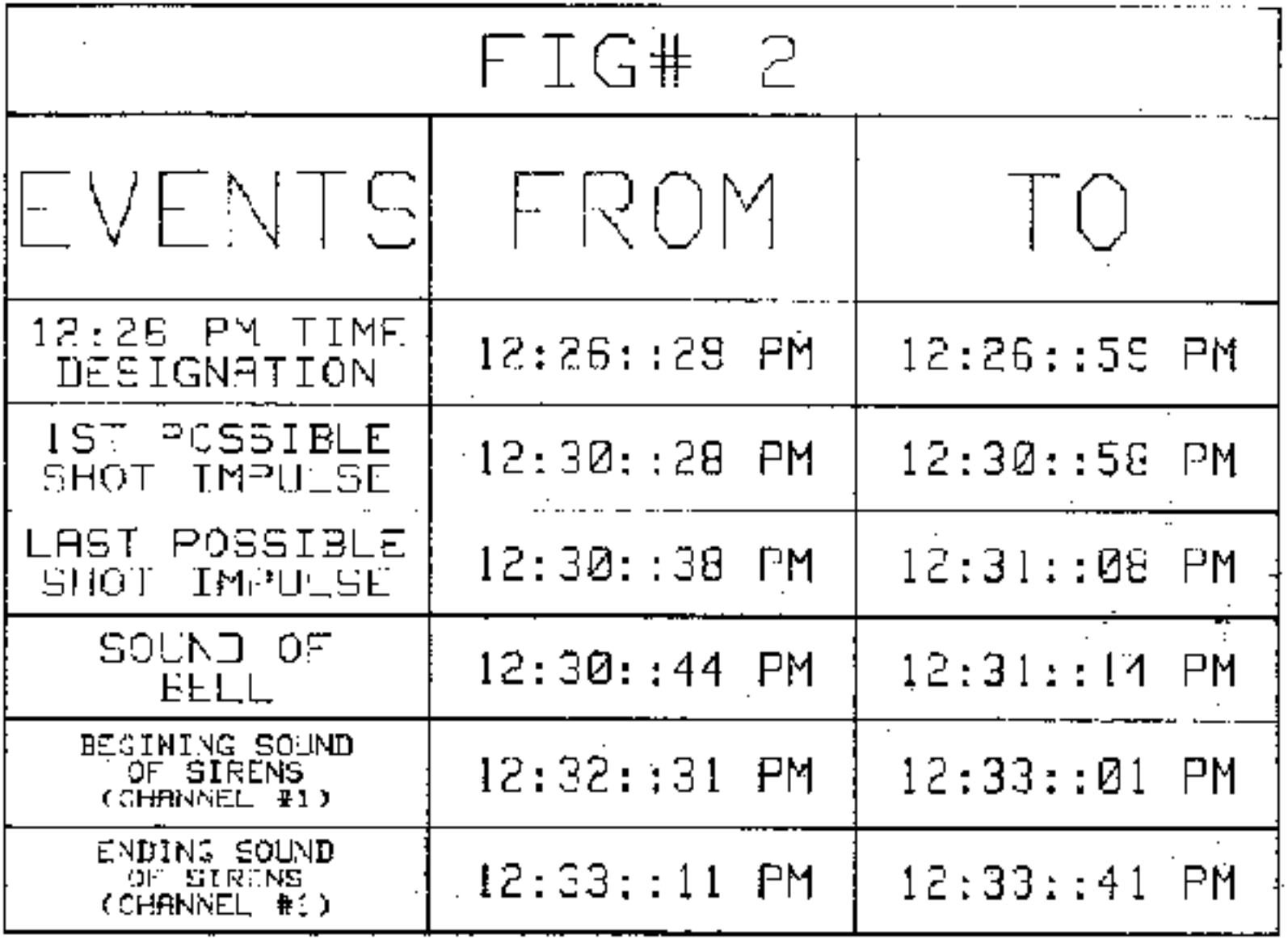
Respectfully submitted to The Select Committee on Assassinations,

Anthony J. Pellicano
President



FTG# 1

DISPATCH REPORTED TIME	INTERVAL	A	B	C	D
#1 12:26 PM		12:25::30 PM	12:26::23 PM	12:26::00 PM	12:26::59 PM
	20 SECONDS				
#2 12:27 PM		12:25::50 PM	12:26::49 PM	12:26::20 PM	12:27::19 PM
	18 SECONDS				
#3 12:27 PM		12:26::08 PM	12:27::07 PM	12:26::38 PM	12:27::37 PM
	22 SECONDS				
#4 12:28 PM		12:26::30 PM	12:27::29 PM	12:27::00 PM	12:27::59 PM



FIG# 2

EVENTS	FROM	TO
12:26 PM TIME DESIGNATION	12:26::29 PM	12:26::59 PM
1ST POSSIBLE SHOT IMPULSE	12:30::28 PM	12:30::58 PM
LAST POSSIBLE SHOT IMPULSE	12:30::38 PM	12:31::08 PM
SOUND OF BELL	12:30::44 PM	12:31::14 PM
BEGINING SOUND OF SIRENS (CHANNEL #1)	12:32::31 PM	12:33::01 PM
ENDING SOUND OF SIRENS (CHANNEL #1)	12:33::11 PM	12:33::41 PM