ADDENDUM D

REPORT OF DAVID O. DAVIS, M.D., CONCERNING THE EXAMINATION OF THE AUTOPSY X-RAYS OF PRESIDENT JOHN F. KENNEDY, DATED AUGUST 23, 1978

REPORT OF DAVID O. DAVIS, M.D., CONCERNING THE EXAMINATION OF THE AUTOPSY X-RAYS OF PRESIDENT JOHN F. KENNEDY, DATED DECEMBER 22, 1978

THE
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10352

MEMORANDUM TO: Mr Mark Flanagan, US House of Representatives Select Committee on Assassinations Staff Member

FROM: David O Davis, MD
Professor and Chairman
Department of Radiology
The George Washington University Hospital
Washington DC

PLACE: The George Washington University Hospital
Department of Radiology
Washington DC

DATE: August 23, 1978

SUBJECT: Examination of JFK Autopsy X-Rays

PERSONS PRESENT: Doctor Davis, Mr Mark Flanagan (HSCA), Mr Michael Leahy (National Archives)

I reviewed the Kennedy skull films labeled #1 and #2, taken at the US Naval Hospital on September 22, 1963, and two aerospace enhanced images of those films.

The findings are as follows:

There is massivecalvarial damage, which will be described below. There is a metallic fragment about 9 or 10cm above the external occipital protuberance, which metallic fragment is apparently imbedded in the outer table of the skull. On the frontal view, this metallic fragment is located 2.5cm to the right of midline, and on the lateral view, it is approximately 3-4cm above the lambda. There are a large number of fractures in the calvarium, and the linear fractures seem to more or less emanate from the imbedded metallic fragment, and radiate in a stellate fashion in various directions. There is a large fracture extending directly anteriorly along the sagittal suture, which is, at least at the point visualized, widely separated. This fracture seems to extend into the frontal bone, more or less at the midline, down to

the frontal sinus which is also fractured. There is a sharply defined linear fracture extending laterally from the metallic fragment into the left side of the calvarium, around the parietal bone to the lateral aspect of the skull. Two linear fractures extend inferolaterally from the metallic fragment, one into the occipital bone, about 3cm from the midline, and this fracture crosses the lambdoid suture. The other one is more lateral, and extends down toward the lateral sinus, probably above the lambdoid suture.

Additionally, there is a fracture line extending more or less laterally from the metallic fragment toward the temporal bone on the right side, which is identified only by the anterior edge of the posterior fragment, since there is apparently absence of bone anterior to this line, with the absence present to a point approximately equivalent to where the coronal suture on the right side should be.

There is a fracture fragment inferior to the absent bone, with the corner of the fragment extending down to the parietal squamosal suture, and this fragment is displaced from its normal position as indicated by overlap of the infero and posterior aspects of the fracture fragment. There is a faint line extending inferiorly from the superior aspect or vertex of the skull towards this fragment, which I feel is probably a shadow caused by avulsed scalp and is not explained by absent bone although it projects essentially over the central portion of the absent parietal calvarium that is evident.

The absent bone in the parietal region apparently includes some fragment from the left parietal region, since the fracture seems to cross the midline where there is some lucency, and presumably part of the sagittal suture and sagittal sinus is absent.

The right orbital rim is also fractured laterally, and the roof of the orbit is fractured on the right side, as is the inferior orbital rim, indicating that there is an unstable orbit.

There are a number of metallic fragments extending anteriorly from the inner table of the skull at a point approximately 6cm antero-superiorly from the previously described imbedded metallic fragment. These fragments extend inferoanteriorly across the entire skull and actually project (on other images that I have seen) in a fashion that suggests that the the large fragment is outside the intracranial space. Presumably this represents a metallic fragment in the scalp, although this cannot be accurately determined from this particular examination.

There is some air in the subarachnoid space of the spinal canal, and also apparently in the temporal lobe sulci in the middle fossa, presumably on the right side, but since the fracture is open to the subarachnoid space, this is not at all surprising.

CONCLUSION: There is an extensive comminuted, open, explosive calvarial fracture which seems to radiate in various directions as described above from a central point which is located in the right parietal bone, 3cm from the midline and about 9 or 10cm from the external occipital protuberance. There is absence of a part of the calvarium, beginning near the impact point and extending anteriorly to the coronal suture, with absence of a significant amount of bone in the right parietal and presumably a small amount of left parietal region. There is a displaced fragment or fragments in the right frontal and parietotemporal region, with some overlap of the bone. There is a significant fracture in the frontal region extended into the right orbit and frontal sinus. The fractures also extend, from the posterior impact point, into the occipital bone on both sides.

I neglected to describe in the text of this report an extensive fracture which extends inferolaterally from the impact point toward the left side which probably reaches the temporal bone or at least the mastoid region after crossing a goodly portion of the occipital bone there. It seems apparent that explosive impact occurred in this calvarium. It also seems reasonable to assume that the exit point is near the coronal suture on the right side, about 5 or 6, or perhaps slightly more, cm above the pterion. It is not possible to totally explain the metallic fragment pattern that is present from some of the metallic fragments located superiorly in the region of the parietal bone, or at least projecting on the parietal bone, are actually in the scalp. The frontal view does not give much help in this regard and it is impossible to work this out completely.

I have also reviewed the films numbered 8, 9 and 10, which are of the thoracic region. In addition, I reviewed a film taken at Doctor White's office on Park Avenue in New York, in 1960.

Evaluation of the pre-autopsy film shows that there is some subcutaneous or interstitial air overlying the right C7 and T1 transverse processes. There is disruption of the integrity of the transverse process of T1, which, in comparison with its mate on the opposite side and also with the previously taken film, mentioned above, indicates that there has been a fracture in that area. There

is some soft tissue density overlying the apex of the right lung which may be hematoma in that region or other soft tissue swelling.

Evaluation of the post-autopsy film shows that there is subcutaneous or interstitial air overlying C7 and T1. The same disruption of T1 right transverse process is still present.

On the film of the right side, taken post-autopsy, there are two small metallic densities in the region of the C7 right transverse process. These densities are felt to be artifact, partly because of their marked density, because there is a similar artifact overlying the body of C7, and because these metallic-like densities were not present on the previous, pre-autopsy film. Therefore, I assume that these are screen artifacts from debris present in the cassette at the time that this film was exposed.

OPINION: There is evidence of interstitial air on the pre-autopsy film, and evidence of a right T1 transverse process fracture, both on the pre-autopsy and post-autopsy film. The fracture fragments are not significantly displaced. I do not feel that there is any evidence of foreign body on these films, and that the small metallic density mentioned above, overlying the C7 transverse process region, is actually an artifact.

DOD/mhw

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Office of the Chairman
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December 22, 1978

Mr Kenneth Klein
US House of Representatives
Select Committee on Assassinations
House Annex #2
Washington DC 20015

Dear Mr Klein:

In light of the recent revelations concerning the alledged acoustical evidence of a fourth shot in the Kennedy assassination in 1963, Doctor Michael Baden and I reviewed the appropriate x-ray films and photos.

After careful perusal of all of the material, I must say that I see no evidence to support any belief that a second shot struck President Kennedy's skull. It seems that the drawings that were produced, after our previous work, are correct. In fact, we were even more convinced after this perusal that the bullet that entered President Kennedy's head in the right posterior aspect actually exited in the right frontal region, at the midportion of the coronal suture, just as is shown on the drawings. There are no additional fragments that cannot be explained by this posteriorly entering missile, and some x-ray and photographic evidence of metallic deposition and beveling seems to strongly confirm the fact that the right frontolateral injury is secondary to an exit wound at that location.

Careful consideration was given to the fact that the fourth shot may have come from the "grassy knoll" and visualization of the course that such a bullet would have to take tends to completely rule out any additional missile striking President Kennedy from the right side. We then considered all of the possibilities and came to the conclusion that the only possible occurence would have required President Kennedy's head to have been tilted to the left side, that is, with the right ear elevated and the left depressed, to a level

of about 22^{o} off horizontal, if the bullet were to travel a horizontal path on a level with President Kennedy's upper skull. Any additional degrees of angulation required by an assessment of the height of the grassy knoll in relation to Mr Kennedy's head would have to be added to the above mentioned 22^{o}, in order to justify our potential explanation that a tangential blow might have been struck to the right top of Mr Kennedy's skull at about the same time the posterior missile entered. In other words, if the grassy knoll would require a downward pathway of 15^{o} off the horizontal, the head would have to be tilted approximately 37^{o} to the left at the time of impact. If the films of Mr Kennedy's head at the time of impact do not show such a tilt, I think that it is completely reasonable to assume that there was no possible head wound from the right side. As mentioned above, all of the other analysis totally supports this conclusion, that is, that there was no second bullet wound in Mr Kennedy's skull. I hope that this is a clear statement and that these impressions and opinions will be useful to you in the upcoming considerations.

Thank you very much for the opportunity to participate.

Sincerely,

David O Davis, MD
Professor and Chairman
Department of Radiology

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