

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLUMBIA

Turner

MELISSA HOPE MARCHETTI, also known as
NGO THA HOA THUONG, a minor who sues
by and through her next friends and adop-
tive parents, DENNIS A. and PAMELA MAR-
CHETTI, 15 10th Street, Derby, Connecticut
06418, phone: (203) 735-7933; and by and
through her guardian ad litem, CHARLES R.
WORK and PEABODY, RIVLIN, LAMBERT &
MEYERS, Twelfth Floor, Connecticut Building,
1150 Connecticut Avenue, N.W., Washington,
D. C. 20036; phone: (202) 457-1016

Civil Action No.
76-0544

Plaintiff

v.

LOCKHEED AIRCRAFT CORPORATION

Defendant and
Third-Party Plaintiff

v.

THE UNITED STATES OF AMERICA

Third-Party Defendant

Deposition of:

CHARLIE D. TURNER, JR.

Saturday, October 31, 1981

Washington, D. C.

GASDOR REPORTING COMPANY
General Stenotype Reporting
499 South Capitol Street, S.W., Suite 408
Washington, D. C. 20003

(202) 484-0016

Deposition of CHARLIE D. TURNER, JR. was taken, pursuant to notice, before Albert J. Gasdor, a Notary Public in and for the District of Columbia, commencing at 12:03 o'clock, p.m., Saturday, October 31, 1981, in the law offices of Haight, Gardner, Poor & Havens, Suite 1000, 1819 H Street, N. W. Washington, D. C.

APPEARANCES:

On behalf of the Plaintiff:

ROBERT W. LEWIS, ESQ.
Lewis, Wilson, Lewis & Jones, Ltd.
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Phone: (703) 527-8800

On behalf of the Defendant Lockheed:

CARROLL E. DUBUC, ESQ.
JOHN J. CONNORS, ESQ.
NICHOLAS H. COBBS, ESQ.
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Suite 1000
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Washington, D. C. 20006
Phone: (202) 775-1300

I N D E X

Saturday, October 31, 1981

Washington, D. C.

DEPONENT :

DIRECT EXAMINATION

CHARLIE D. TURNER, JR.

8

E X H I B I T S

NUMBER

FOR ID.

TRANSCRIPT
REFERENCE

Turner No. 1 Notice of Deposition

17

17

Turner No. 2 Handwritten notes
 of Dr. Turner

18

18

Turner No. 3
(D-9) Wreckage Distribution Diagram

102, 110, 111, 112,
116

D-1303

121, 127

D-1298

127

REQUEST FOR DOCUMENT PRODUCTION:

Page 18 Line 18

Page 30 Line 30

Page 53 Line 11

Page 58 Line 13

1 MR. DUBUC: Let me put on the record it is now
2 12:00 o'clock. We were hoping to start at 11:00. We got a
3 call about 9:00 o'clock indicating Judge Oberdorfer wanted a
4 conference call at 11:00. The conference call finally came
5 at about 11:20 and lasted for about 15 minutes. As a result
6 there are some communications he asked us to make which we
7 attempted to make. For that reason we are starting late.

8 I hope we will not be precluded, because it was
9 beyond our control.

10 MR. LEWIS: It is our understanding that our office
11 got a call when the deposition was originally scheduled for
12 11:00 to not come until 11:30. I say that only to make it
13 clear that the suggestion that we are starting at the time we
14 are starting is not in any way due to our inability to be here.

15 I would also like to say that I am advised that
16 Doctor Turner has a plane flight out at 4:54 from National.
17 I presume Doctor Turner is willing to go as long without
18 eating lunch as you can.

19 MR. CONNORS: Before we begin the deposition,
20 plaintiffs have requested that we produce any negatives which
21 we have in our possession. As we have indicated in papers
22 which we filed with the court yesterday, we had certain negatives

1 for the Tarbell-4 series of exhibits which were returned to
2 the government late last week. I don't recall the precise
3 date.

4 We also indicated in those papers that we had
5 borrowed from the government certain negatives for black and
6 white prints which we were using to prepare for our trial
7 exhibits.

8 We have now received those back from the photo lab
9 and, on the record, I would like to deliver those to plaintiff's
10 counsel at this time.

11 They consist of approximately 105-1/2 frames of
12 pictures on film negatives as follows: Ten sheets of film with
13 three negatives each and two pieces of film with two negatives
14 each. Those are all on what I understand are referred to as
15 large frame negative format.

16 In addition, there are 35 millimeter negatives with
17 six films of six frames each, five frames of five frames each;
18 two frames of four and one frame of one film of tow-and-a-half
19 frames, for a total of approximately 105 slide frames.

20 Perhaps Mr. Lewis would like to check those to make
21 sure they are all there.

22 MR. LEWIS: I will take your word for it.

1 MR. CONNORS: What I am turning over to you is all
2 of the negatives which we had in our possession from the
3 government.

4 MR. DUBUC: Not including the ones you have already
5 delivered.

6 MR. CONNORS: The Tarbell-4 series were returned
7 to the government. You now have all of the negatives which
8 were remaining in our possession. We now have no negatives
9 from the government.

10 MR. LEWIS: Can I inquire whether you have any copies
11 of the prints of these negatives that would be available?

12 MR. CONNORS: The prints of these were furnished to
13 both sides previously. That is my understanding.

14 MR. DUBUC: These are negatives of prints previously
15 provided. These are not new. These are negatives of prints
16 previously received by us and I understand by you from the
17 government, prints having been previous received. The request
18 was made by emergency motion this week for the negatives. I
19 was informed by the court yesterday, and by conference call
20 subsequently, that Mr. Dumbroff had delivered all of the other
21 negatives except these which we had borrowed prior to the
22 request and which we have now gotten back from our lab and are

1 delivering to you so that, as I understand it, you have all
2 of the negatives not only that we have but I understand, al-
3 though I can't represent, but I understand from those conversa-
4 tions and what was said in court, Mr. Dumbroff has now delivered
5 all of the other negatives.

6 MR. LEWIS: Are these what were referred to the
7 other day, the 70 negatives, but in fact there are 105.
8 Whereupon,

9 CHARLIE D. TURNER, JR
10 was called as a witness and, having been duly sworn by the
11 Notary Public, was examined and testified as follows:

12 DIRECT EXAMINATION

13 BY MR. DUBUC:

14 Q Doctor Turner, state your name and address for
15 the record.

16 A Charlie D. Turner, Jr. My address is [REDACTED]

17 [REDACTED] Raleigh, North Carolina.

18 Q Doctor, when were you first contacted by the Lewis
19 firm or a representative thereof to consult on these cases?

20 A I wrote the goodies down. Friday, the 16th of
21 October.

22 Q Who contacted you?

1 A Michael Cohen. I again talked to him --

2 Q Was that by telephone?

3 A That was by telephone.

4 Q When was the next time you talked to him?

5 A It was on the 19th of October. That was a Monday.

6 Q Telephone call, also?

7 A Yes, sir.

8 Q Between the 16th and 19th of October, did you
9 receive any materials from Doctor Cohen or the Lewis firm?

10 A No materials at that time.

11 Q Did you have any subsequent contacts with Doctor
12 Cohen or anybody else of the Lewis firm after October 19th?

13 A I visited with Michael Cohen on the 24th of October.

14 Q Where?

15 A It was 2054 - 14th Street.

16 Q That is over in Arlington at the Lewis offices?

17 A That is correct.

18 Q Who else was present?

19 A Scott was there.

20 Q Who?

21 A An engineer by the name of Scott. His first name
22 is Scott.

1 Q He is an engineer?

2 A That is correct.

3 Q Did he describe his background to you?

4 A The only thing we talked about was background. He
5 graduated from VPI.

6 MR. LEWIS: Are you talking about the engineer or
7 Doctor Cohen?

8 MR. DUBUC: The engineer.

9 THE DEPONENT: He graduated from VPI.

10 BY MR. DUBUC:

11 Q When did he graduate from VPI?

12 A I did not ask the date.

13 Q What was the date of the visit again? Did you say
14 the 24th?

15 A It was October 24.

16 Q How long did that conference or visit last?

17 A From 9:00 o'clock to 4:00 o'clock. I had to catch
18 the same flight.

19 Q You came up in the morning?

20 A I came up the evening before.

21 Q Where did you stay the evening before?

22 A It was in the Key Bridge Marriott.

1 Q Did you have any conferences that evening?

2 A No, I did not.

3 Q Who paid for the room?

4 A It was in the name of the law firm.

5 Q You did not pay anything?

6 A No, it was prepaid.

7 Q Did you come up alone?

8 A Yes.

9 Q And you returned on the evening of the 24th?

10 A That is correct.

11 Q During that conference what, if any, documents or
12 other information did you receive relevant to any opinions
13 you were going to form?

14 A Initially, we looked at two motion pictures, one
15 being about a 6-inch reel of film and the other being about
16 a 3-inch of film. There were several sequences of helicopters
17 taking pictures of the crash site.

18 Also, at that time I received an index to plaintiff's
19 deposition, Volume 1, to look at.

20 I also received a report by James Turnbow entitled
21 "Analysis of G-Levels Associated With the C5A Accident Near
22 Saigon" dated April 4, 1975.

1 Q Anything else?

2 A There was one other thing that I can remember,
3 anyway, and that was the "Description of the Distribution
4 Pattern of the Airplane;" that had the 4 April 1975 date on
5 it, "A Description of Events," no date, and a personnel
6 location in the aft troop compartment, no date.

7 Q Anything else?

8 MR. LEWIS: Your question is relating to what he
9 received at that point?

10 MR. DUBUC: Yes.

11 THE DEPONENT: Not that I can recall.

12 BY MR. DUBUC:

13 Q Did you take those items back to your home or
14 office?

15 A Yes, I did.

16 Q When was the next time you had any contact with
17 Doctor Cohen or anybody at the Lewis' firm?

18 A That would have been Friday morning, the 30th.

19 Q Yesterday?

20 A Yesterday.

21 Q How was that? By telephone, or in person or what?

22 A That was by telephone.

1 Q Who called you?

2 A I had received a note earlier in the week to call
3 a Lisa Collis about returning here and I returned her call
4 Friday morning.

5 Q You made arrangements to come back up here?

6 A That is correct.

7 Q You came up last night?

8 A That is correct.

9 Q Did you have any conferences with anybody in the
10 Lewis firm yesterday?

11 A Yes, I met with Michael Cohen last night and
12 received two other volumes. I looked at some information
13 which he gave me which was two other volumes of plaintiff's
14 index to depositions. He also gave me another copy of
15 James Turbow's report which was in the material I was to
16 look at.

17 Q Did you receive anything else to look at?

18 A Just before I left, there was delivered a set of
19 documents from Lockheed Aircraft Corporation.

20 Q Delivered from Lockheed?

21 A I don't know where they were delivered from.
22 There were several boxes brought in that were just delivered

1 and they contained Lockheed reports. It was mentioned earlier
2 that these might be beneficial reports -- load reports,
3 weight reports and fuselage and empennage stress analysis.

4 Q You had mentioned that to whom a week earlier?

5 A Michael Cohen a week earlier, that it might help.

6 Q Was that the first time you mentioned that to
7 him?

8 A The first time I mentioned that would have been
9 on the 24th of October.

10 Q Have you had a chance to look at those yet?

11 A I reviewed two of those reports last night.

12 Do you want the numbers?

13 Q Yes.

14 A It was Lockheed Report No. LG-1 US 46-2-2,
15 dated 30 September 1968. It is entitled "Internal Loads
16 Analysis Aft Fuselage."

17 The other report is Lockheed Report No. LG-1 US 4-12-1.
18 That is entitled "Inertia Loads Reports."

19 Q You brought those back up with you? You reviewed
20 those last night. Did you bring those two reports back
21 with you?

22 A Back from where?

1 Q You said you reviewed them from where?

2 A I took them from the office to the motel and then,
3 when I came back from the motel to the office, I brought them
4 back with me.

5 Q But you originally took them out of the boxes you
6 received down in North Carolina?

7 A No, they were not mailed. Those reports were
8 delivered to the law office. I was sitting in the law
9 office, they brought them into the law office to me, so the
10 first time I saw them was last night, on the 30th of October.

11 Q They were not delivered to you by Lockheed but they
12 were delivered to you in the law office?

13 A That is correct.

14 Q And you selected two of them from the boxes and
15 took them to the motel?

16 A That is correct.

17 Q Do you have them with you today?

18 MR. LEWIS: Do you mean here?

19 MR. DUBUC: Yes.

20 MR. LEWIS: No.

21 BY MR. DUBUC:

22 Q Have you reviewed anything else than the things you

1 have told me so far?

2 A Yes, I have. I reviewed the partial trial testi-
3 monies of John Edwards dated 5/21/80 and 5/11/80, and his
4 deposition. I did not see a date on that.

5 Q You don't know which deposition? There were
6 several.

7 A I do not.

8 MR. DUBUC: Do you know which one he reviewed?
9 There were several depositions.

10 MR. LEWIS: No.

11 THE DEPONENT: I reviewed the trial testimony of
12 William Timm and that was 3/18/80 and 5/12/80.

13 I reviewed the deposition of James Turnbow dated
14 8 October 1981.

15 Q October 8, 1981?

16 A 8 October '81.

17 And then, the two Lockheed reports.

18 Q When did you review the trial testimony of Edwards
19 and his deposition and Timm's testimony and Turnbow's deposi-
20 tion? When did you review those?

21 A I will check the calendar on that. Those I re-
22 ceived when I returned to the University on 21 October.

1 Q You received those here?

2 A I received those at the North Carolina State Uni-
3 versity, 21 October, this year.

4 Q Those were sent to you?

5 A That is correct. That was the trial testimony
6 and Turnbow's deposition.

7 Q Edwards' trial testimony, Turnbow's deposition and
8 Timm's deposition?

9 A And John Edwards' deposition.

10 Q I notice you are referring to some notes. Are
11 those as to what you have received?

12 A I kept a list.

13 MR. DUBUC: I would like to mark those Turner
14 Exhibit 1.

15 MR. LEWIS: I would suggest since they are not
16 attached that we Xerox these things.

17 MR. DUBUC: We will mark Exhibit 1 the notice of
18 deposition.

19 (Said document marked Turner

20 Exhibit No. 1 for identification.)

21 MR. DUBUC: And we will mark the notes Turner
22 Exhibit 2.

(Said document marked Turner

Exhibit No. 2 for identification.)

BY MR. DUBUC:

Q Doctor Turner, what else have you brought with you today in connection with your review of materials and in connection with your preparation of testimony?

A I have nothing else with me.

MR. DUBUC: I want to refer to the notes of deposition that I asked him to bring with him.

BY MR. DUBUC:

Q You say you have reviewed several indexes of depositions. Were those just indexes or did those contain facts? You said Volume 1 and two other volumes.

A There is an index and then the document had different facts.

Q Factual information?

A That is correct.

MR. DUBUC: I will call for the production of those. I don't know what facts he has reviewed. We can't cross examine on something we don't have.

Do you have those with you?

MR. LEWIS: No.

1 MR. DUBUC: Can they be made available here while
2 we continue?

3 MR. LEWIS: They are facts in depositions. You have
4 the depositions.

5 MR. DUBUC: I don't know what is in there and I
6 assume those are not the depositions. I assume there may be
7 all kinds of factual things in there that may be included in
8 the deposition. I have no way of knowing.

9 MR. LEWIS: They are summary digests. There is
10 nothing in there that is not in the deposition.

11 MR. DUBUC: I don't know what is not in there.
12 There may be relevant things that are not in the deposition.

13 MR. LEWIS: I hear what you are saying.

14 MR. DUBUC: Off the record.

15 (Discussion off the record.)

16 MR. DUBUC: Back on the record.

17 BY MR. DUBUC:

18 Q In connection with the opinions you have formulated
19 or are in the process of formulating, have you relied on facts
20 in those deposition summaries?

21 A In the deposition summary --

22 Q This is the index of the depositions.

1 A Index to plaintiff's depositions. One part of it
2 had a "Distribution of Parts Pattern." I had that included
3 in the package and I had that also given to me.

4 Q Were there some summaries of testimony in it?

5 A The only summary of testimony was the testimony of
6 Technical Sergeants who had worked on the airplane.

7 Q What were their names?

8 MR. LEWIS: I don't think you want to know.

9 MR. DUBUC: What were their names?

10 MR. LEWIS: I suggested that you can ask him any-
11 thing you want to ask him about what facts he is relying on
12 or what he is looking at.

13 MR. DUBUC: I am trying to find out what he reviewed.

14 MR. LEWIS: Just answer his question.

15 BY MR. DUBUC:

16 Q What were the names of the Technical Sergeants
17 whose testimony you reviewed?

18 A I did not look at their names.

19 Q What else was in those deposition summary indexes?

20 A There were the events leading up to the crash of
21 the airplane as given by the Air Force.

22 Q Is there a date on that?

1 A I did not mark the date.

2 Q Do you know who prepared it?

3 A The Air Force.

4 Q Who in the Air Force?

5 A The Accident Investigation Board.

6 Q Was it the Accident Investigation Board or the
7 Collateral Investigation Board?

8 A It was the Collateral.

9 Q Have you seen the Accident Investigation Board
10 summary report?

11 A Not that I know of.

12 Q Do you know if it is in that group of papers in
13 the deposition indexes?

14 A No, I don't.

15 Q You don't know one way or the other?

16 A I only looked through areas that concerned what
17 I was interested in.

18 Q What else was in there?

19 A The only thing I really looked at was the events
20 leading up to the crash. I looked at the dispersion pattern
21 and those were the areas of interest to me. I was not really
22 concerned with anything that occurred before the airplane

1 started to land.

2 Q You mentioned a description of events with no date.
3 What was that?

4 A Essentially, that is what it is. It is a descrip-
5 tion of the events.

6 Q Did that description differ in any way from the
7 description of events in the Collateral Accident Report
8 Summary? Did you compare them?

9 A The events were essentially the same, as I recall.

1 Q Did you make any comparison to see if all of the
2 facts of the collateral accident investigation summary were
3 included in the undated summary of events?

4 MR. LEWIS: I object to the form of that question.

5 No human being can do that.

6 MR. DUBUC: No, sir, it is not. That is part of it
7 and the rest of it is whether he is relying upon anything else.

8 BY MR. DUBUC:

9 Q Can you tell us if you made that comparison?

10 A No, sir, I did not make a detailed comparison.

11 Q Do you know who prepared that undated description of
12 events?

13 A No, I do not.

14 Q You referred to a description of the distribution
15 of personnel in the troop compartment.

16 A That is correct.

17 Q Was that in this same group of documents that you
18 reviewed?

19 A I didn't look to see if it was or not.

20 Q Do you know who prepared that?

21 A No, I do not.

22 Q What did that state?

1 A It has a view of the seat distribution in the aft
2 troop compartment and it noted the locations of different
3 individuals and attached to that was the reasoning why those
4 people in those locations, I assume, from information obtained
5 from other reports or other depositions or statements.

6 MR. LEWIS: I would say for the record that what he
7 looked at, you have everything regarding documentation. You
8 have copies of everything that he has looked at. We have not
9 provided him with regard to the collateral report and those
10 things he has been talking about with anything you don't have.

11 You might show him the collateral report or any
12 documents and he can say whether he saw them or not.

13 MR. DUBUC: You have already made a point, Mr. Lewis,
14 and we already understand the time constraints in this depo-
15 sition. For us to have to go through this exercise on such
16 short notice particularly when we are talking about undated and
17 source unidentified documents is certainly highly within the
18 spirit of this. I don't know whether we have it or not but I
19 am going to try to determine it.

20 BY MR. DUBUC:

21 Q You testified that this summary indicated certain
22 locations of certain individuals in the troop compartment. Can

1 you tell us the names of the individuals?

2 A No, I can't.

3 Q Can you tell us any of the positions of any of the
4 individuals?

5 A Since it did not concern what I was doing, I really
6 did not mark their locations.

7 Q Have you read the testimony of any of those individuals
8 who were in the troop compartment, the survivors?

9 MR. LEWIS: I will object to the form of that question.

10 THE DEPONENT: I don't recall reading any of their
11 testimony.

12 BY MR. DUBUC:

13 Q Is that relevant to what you are doing?

14 A No, it isn't.

15 Q The position or circumstance related to the individuals
16 in the troop compartment is not relevant for the opinions that
17 you are forming?

18 A Not their pattern of location, no.

19 Q Are the injuries to those individuals, if any, rele-
20 vant?

21 A No, I don't believe it would be.

22 Q Your opinions are not based in any way on the location

1 or injuries suffered or might have been suffered, if any, of
2 any of the individuals in the troop compartment?

3 MR. LEWIS: I object to the form of that question.
4 That is not what he testified to.

5 BY MR. DUBUC:

6 Q Is that correct?

7 A I cannot testify to injuries of individuals.

8 Q Did the distribution of personnel in the description
9 you reviewed indicate anything with respect to the kinds of
10 injuires or what occurred to those individuals during the
11 accident sequence?

12 MR. LEWIS: I object to the form of that question.

13 THE DEPONENT: The type of injuries would not concern
14 the type analysis or the type thing I was looking at.

15 BY MR. DUBUC:

16 Q So that is not important or significant to what
17 you are doing?

18 A No, I was just given the information. I looked at
19 it, closed it up and put it back down.

20 MR. LEWIS: Before we go on, I presume we have the
21 same types of stipulations in the past with regard to depositions?

1 BY MR. DUBUC:

2 Q Did you bring with you the two Lockheed reports you
3 took back to the motel and which you took back to the office?

4 MR. LEWIS: He testified he has not brought anything
5 except these two pieces of paper.

6 BY MR. DUBUC:

7 Q Did you make any notes on the copies of the two
8 reports from Lockheed? Did you underline anything?

9 A I did not note anything in the reports themselves.

10 Q Is there anything there of any significance to you?

11 A No, sir.

12 Q But you did not make any notes on the reports?

13 A No, sir. I figured I could turn to the pages again
14 and look at the data if I wanted to.

15 Q Do you have any notes with respect to any of your
16 conferences or any of your review of any of this information,
17 any personal notes that you have made?

18 A I have not made any personal notes.

19 Q Other than notes that we have just Xeroxed, the two
20 small pages you have looked at, you have nothing else with
21 you this morning?

22 A No, I do not.

1 Q Nothing in your brief case?

2 A No, sir.

3 Q Anything in your hotel room?

4 MR. LEWIS: Does he have anything in the hotel room.

5 I object.

6 BY MR. DUBUC:

7 Q Do you have any documents in your bag at the motel
8 or at Mr. Lewis' office?

9 MR. LEWIS: I am sure there are documents in our
10 office.

11 MR. DUBUC: Documents you have reviewed that are in
12 your bag?

13 THE DEPONENT: I plan on looking at the two Lockheed
14 reports in more detail.

15 BY MR. DUBUC:

16 Q Those are in your bag and not your brief case here?

17 A No.

18 Q Did anyone tell you to put them in your bag and not
19 to bring them here?

20 MR. LEWIS: Not to bring what?

21 BY MR. DUBUC:

22 Q Did anybody tell you not to bring those two Lockheed

1 reports with you?

2 A I was told I probably would not need them.

3 Q You were told you probably wouldn't need them; is
4 that right?

5 A That is correct.

6 Q Who told you that, sir?

7 A I am not sure.

8 Q Somebody at the Lewis firm?

9 A I am not sure.

10 MR. LEWIS: I will object if you are going to ask
11 him what lawyers told him.

12 THE DEPONENT: There are so many different people and
13 so many different names.

14 BY MR. DUBUC:

15 Q Do you know anyone other than an employee of the
16 Lewis firm, any other description of people?

17 MR. LEWIS: He has already testified he does not
18 remember. If you are going to pursue this line of questioning,
19 I am going to instruct him not to answer.

20 THE DEPONENT: You will have to ask your question
21 again.

1 BY MR. DUBUC:

2 Q I am trying to determine, to the best of your recol-
3 lection, sir, if someone at the Lewis firm representing the
4 plaintiffs, Doctor Cohen or anybody else, particularly Doctor
5 Cohen or anybody else over there told you that you would not
6 need anything at this deposition?

7 MR. LEWIS: He has already testified to that question
8 and answered that question. You have rephrased it, including
9 lawyers, and I am going to instruct him not to answer.

10 MR. DUBUC: We will note our request on the record,
11 Mr. Lewis, if we have some time today. It is 12:30 and we
12 have until approximately 4:15 or 4:30 for him to make his plane.

13 I am asking for the production here of documents such
14 as those he has referred to that he has made reference to and
15 that he will rely upon in giving his opinions.

16 The reason I am asking for that is it is true we may
17 have some of those documents here, such as the report of Doctor
18 Turnbow, but I would like to look at them as has been done in
19 the reverse situation when we have had to produce documents
20 that our witnesses have looked at to see if there are any notes
21 or any interlineations or whatever that might be relevant to
22 the opinions he is going to give.

1 That is something your partner, Mr. Oren Lewis,
2 insisted upon and with which we have attempted to comply. What
3 we are doing today is in direct contravention of that process
4 and the agreement that we have had with respect to these
5 documents.

6 MR. LEWIS: I don't want to debate your point on
7 the record or off. I just don't want my silence to be construed
8 I agree with what you say.

9 MR. DUBUC: Are you refusing to have those produced
10 here during the course of the deposition?

11 MR. LEWIS: I do find it unusual that you are suggest-
12 ing that when a witness has made a declaratory statement that
13 he did not underline nor did he make notes on documents that
14 you want to see if, in fact, the witness is telling the truth.
15 If that is your point, if that is what you want to accomplish,
16 I will consider it.

17 MR. DUBUC: That is one thing and he may have made
18 some notes and I also want to be sure I know what he is refer-
19 ring to with respect to undated or source unidentified documents.

20 MR. LEWIS: If you showed him the collateral report,
21 he could identify it in five seconds. You can do this deposition
22 anyway you want. If you have a good reason for not doing it

1 that may well be true but I don't want you to hold this thing
2 up quicker than I could make a phone call.

3 MR. DUBUC: My question is, are you refusing to do
4 that?

5 MR. LEWIS: I did not hear your question.

6 MR. DUBUC: Are you refusing to have your office bring
7 here what items he has reviewed in the package and what he
8 reviewed, particularly yesterday prior to this deposition?

9 MR. LEWIS: I am not refusing to produce them.

10 MR. DUBUC: Would you make a call now so we can go
11 on to something else and we can return to these when they get
12 here.

13 MR. LEWIS: I will call and see if there is a
14 possibility of getting them here.

15 MR. DUBUC: What I am referring to in my question,
16 since Mr. Lewis has asked off the record what they should
17 bring over as to cross examination as to what this witness has
18 reviewed recently in the last few days, what he has described
19 as an index of plaintiff's depositions Volume I and two
20 additional volumes, the report of Doctor Turnbow that he reviewed.
21 We do have a copy here. We don't know which one he reviewed
22 and we don't know if there are any notes in it.

1 MR. LEWIS: In the fact of the direct testimony that
2 the witness did not make any.

3 MR. DUBUC: He did not testify to that.

4 BY MR. DUBUC:

5 Q You did review Doctor Turnbow's report?

6 MR. LEWIS: I want to note it is approximately 25
7 minutes of one. I would like to see how this process is going
8 to take.

9 MR. DUBUC: Let me get on the record the items we are
10 talking about.

11 BY MR. DUBUC:

12 Q Did you make any notes or underline anything in
13 Doctor Turnbow's report when you reviewed it?

14 A I don' tecall. I had two copies of his report. One
15 I took home and one they gave me again in the office.

16 Q You don't recall making any notes in there. You may
17 or may not have inderlined something?

18 MR. LEWIS: I object to the form of that question.
19 It is compound.

20 MR. DUBUC: We are trying to find out so we can expe-
21 dite.

1 BY MR. DUBUC:

2 Q Do you recall if you did that?

3 A I can't.

4 MR. LEWIS: I obviously can't get the one in North
5 Carolina.

6 MR. DUBUC: You also referred to a description of the
7 aircraft accident.

8 MR. LEWIS: Do you want the witness to tell you what
9 you reviewed? You are characterizing it.

10 MR. DUBUC: I am reviewing it for you so you can make
11 the telephone call.

12 MR. LEWIS: He is saying no and you don't want to
13 hear what he has to say.

14 MR. DUBUC: I said the description of the aircraft
15 accident dated April 4, 1975.

16 MR. LEWIS: That is what you wrote down. That is
17 not what he said.

18 THE DEPONENT: 4 April '75 was the distribution
19 pattern.

20 MR. LEWIS: Not distribution pattern.

21 BY MR. DUBUC:

22 Q Then you referred to a description of events with no

1 date and you referred to a description of distribution of
2 personnel with no date?

3 A That is correct.

4 Q You referred to two Lockheed reports, HB-1 US-42 and
5 HB-12-1.

6 A That is correct.

7 Q You also reviewed some testimony. Did you make any
8 interlineations or notes or underlining of the testimony of
9 Messrs. Edwards, Timm or Turnbow?

10 A Not that I can recall.

11 Q Do you recall one way or the other?

12 A Not really.

13 Q Remember, you are under oath.

14 A It was two weeks ago when I thumbed through and reviewed
15 the parts that were interesting to me. Whether I underlined
16 or not, I do not know.

17 Q Those are items that we are asking that they be
18 delivered here so we can check and cross examine on them.

19 A I will not have this information here. It is things
20 that were sent to me.

21 Q Which information are you talking about?

22 A If you are talking about any of John Edwards' reports,

1 trial testimony, William Timm, this information --

2 Q Those three are down in your office?

3 A In Raleigh.

4 Q But the other items are in the Lewis' office or some-
5 where in the Washington area; is that correct?

6 A James Turnbow's deposition report is not here.

7 MR. LEWIS: He said it is not here.

8 MR. DUBUC: I understand that.

9 THE DEPONENT: The distribution pattern they originally
10 gave me. I took that home. It is not here.

11 The description of events that was given to me is not
12 here.

13 The personnel location, the copy I have is not here.
14 Whether it is in the other report, I don't know.

15 The index to plaintiff's deposition, the one I was
16 given to review, I saw a similar copy in the office last night.
17 I actually did not review Volumes II, and III totally.

18 I did look in detail at the Lockheed reports.

19 BY MR. DUBUC:

20 Q To the extent those items are here that you looked at
21 I want them.

22 A With the Lockheed reports, you have multisegment

1 volumes.

2 Q You have given us the numbers of two of them you
3 looked in detail.

4 A There are additional volume numbers.

5 Q But you looked at those two in detail.

6 A Volume I. It might have been Volume II. I would
7 have to check the volume numbers, if he is going to call.

8 Q What volumes are they?

9 A I and II -- whatever volumes are in the boxes.

10 Q By those dates and numbers.

11 MR. DUBUC: Can we do that?

12 MR. LEWIS: I will give a call.

13 [Whereupon, Mr. Lewis and Doctor Turner withdrew
14 from the conference room. After a brief recess, Mr. Lewis and
15 Doctor Turner returned to the conference room.]

16 MR. LEWIS: Back on the record.

17 I have checked with the office. There are numbers
18 of experts over there being prepared for trial. The documents
19 that Doctor Turner has reviewed -- there are duplicates over
20 there but they are primarily from the collateral report or the
21 two Lockheed documents, which he gave you by number which you
22 must have. The only one that does not fit that -- and

1 Doctor Turner has told me -- and he can correct me if I am
2 wrong -- he made no notes on the distribution pattern, which
3 is also contained in the collateral report and if you show it
4 to him, he can identify it. I think it is a waste of time for
5 a runner to go over to our office for that one page distribution
6 report and I will not produce it.

7 MR. DUBUC: I don't agree with it. We are all under
8 constraints of time preparation.

9 BY MR. DUBUC:

10 Q Now, Doctor Turner, are you being compensated for
11 your time in connection with your consultation on this case?

12 A Yes, I am.

13 Q How much are you being compensated?

14 A I was told \$75 an hour.

15 Q Does that include deposition time and trial testimony?

16 A That is correct.

17 Q How many hours do you have on this case so far?

18 A If you count this morning, somewhere around 40 hours.

19 Q That is at \$75 an hour?

20 A That is correct.

21 Q Have you submitted any bills yet?

22 A No, I have not.

1 Q You have not been paid anything yet?

2 A No, I have not.

3 Q Doctor, they have produced a copy of your resume in
4 here and I will ask you a couple of questions on it.

5 You were with AFATL at Eglin Air Force Base for a
6 time. What do those leeters mean?

7 A Air Force Armament Test Lab and DLJCS is exactly
8 how it is spelled out. That is how the Air Force breaks down
9 its organization.

10 Q Were you a civilian employee of the Air Force?

11 A That is correct.

12 Q Have you ever had any service time?

13 A Yes, I have.

14 Q When was that?

15 A I was in the military, Army Reserve, September of
16 1963 until August of 1969.

17 Q Did you perform active duty?

18 A Yes, I did.

19 Q How long?

20 A Thirty months. I spent June of 1964 through October
21 1964 on active duty training. That was at Fort Jackson, South
22 Carolina for basic training and also attended intermediate radio

1 operator school.

2 MR. LEWIS: He just wanted to know if you had service
3 time.

4 BY MR. DUBUC:

5 Q In connection with that service time, did you perform
6 engineering duties?

7 A No, I did not.

8 Q You did not have a degree at that time?

9 A No, I did not.

10 Q You were with Cessna Aircraft for three years, '78 to
11 '79 -- November '78 to December of '79.

12 Then you went to Beech.

13 What was the reason for that change?

14 A I was working on Model 650, developing night flutter
15 test program. They did not agree on the needs for some safety
16 aspects of the flight test program. I felt that since they were
17 not utilizing my talents that there was not really much use
18 in my remaining with their company.

19 Q Did you make the decision to move?

20 A Yes, I did.

21 Q You were then with Beech for two years; is that
22 correct?

1 A That is correct.

2 Q What did you work on at Beech?

3 A At Beech I was a structural dynamics engineer. I
4 was the dynamics group leader on the Model 1900 Commuter Air-
5 craft, the Model 250 Aircraft. I did preliminary analysis on
6 both those as well as the Model G-90.

7 Q Those are both general aviation small aircraft?

8 A They are twin engine aircraft.

9 Q Approximately how many crew and passengers do they
10 carry?

11 A The maximum would be 19 passengers in the commuter.

12 Q Relatively small aircraft compared to commercial lines?

13 A That is correct.

14 Q While you were with Cessna, you say you worked on
15 an aircraft but I didn't get the number or name.

16 A It is a Model 650 or Citation 3.

17 Q This is also a small general aviation aircraft
18 relative to large airliners.

19 A That is right.

20 Q Whom did you report to at Beech?

21 A At Beech Aircraft I worked for Ed Hooper. He was the
22 immediate supervisor.

1 Q Who was his supervisor?

2 A That would be Dick Tumlinson.

3 Q How about at Cessna?

4 A At Cessna I worked for Mike Smith and Joe Gault.

5 Q While you were in the Air Force at Eglin, you say you
6 worked in the loads and dynamic section with respect to what
7 type aircraft?

8 A I worked on the F-4, F-4E, EA-7, the F-15, the F-16.

9 Q Those are all fighter or attack aircraft?

10 A That is correct.

11 Q Single or dual seat?

12 A It depends upon the aircraft.

13 Q It is either a single seat or pilot and observer?

14 A That is correct.

15 Q Not like a large commercial aircraft?

16 A No.

17 Q You moved from Beech to your teaching job in 1981.
18 What was the reason for that?

19 A After working in industry about ten years and obtain-
20 ing my doctorate degree, I felt I would like to move back to
21 the South and I could work in the area of interest and have more
22 time for doing research type work.

1 Q How much time do you spend on teaching versus
2 research?

3 A At the present time the university is giving me 25
4 percent of my time for research work.

5 Q You teach 75 percent?

6 A That is correct.

7 Q Do you also spend some time consulting in connection
8 with accident cases, such as this one?

9 A Yes, I do.

10 Q Have you done that before?

11 MR. LEWIS: Before when?

12 MR. DUBUC: Before this case.

13 THE DEPONENT: Before this case, I have consulted
14 on one occasion.

15 Q When was that?

16 A It is still in litigation. I don't wish to talk
17 about that.

18 Q I am not going to ask you about the details but I
19 would like to know the nature of the case.

20 A It has to do with a flutter analysis on an airplane.

21 Q That is in litigation?

22 A That is correct.

Q Are you consulting for the plaintiffs or defendants?

1 A I consulted for a firm that is working for the
2 manufacturer of the aircraft.

3 Q Who is the manufacturer?

4 A Piper Aircraft.

5 Q Are you working for the manufacturer or for the
6 attorney?

7 MR. LEWIS: I object to the form of the question.
8 That is a legal question.

9 BY MR. DUBUC:

10 Q Who asked you to consult? With whom do you consult,
11 the name of the person?

12 A It was neither the manufacturer or an attorney. It
13 was another group that was consulting for an attorney.

14 Q Who is the attorney?

15 A I do not know.

16 Q Who is the group?

17 A It is Accident Investigations. It happens to be
18 a professor.

19 Q A professor?

20 A That is correct.

21 Q Professor who?

22 A Professor Manning.

1 Q Where is he located?

2 A At North Carolina State University.

3 Q You are consulting for the defendant in that case,
4 Piper Aircraft being sued by somebody?

5 A That is right.

6 Q Have you given any testimony in that case?

7 A No, I have not.

8 Q Deposition or trial?

9 A No.

10 Q Have you written any reports?

11 A No.

12 Q Any other consultations on litigated matters either
13 since you have been a professor or while you were at Beech or
14 Cessna or the Air Force?

15 A What do you mean by consultation?

16 Q Have you worked on any other accident cases?

17 A While I worked for Cessna, I worked on the 441
18 Concorde.

19 Q You worked on a litigated case?

20 A That is correct.

21 Q What was your role in that?

22 A I was working with one of their consultants and my

1 job was to reconstruct a sequence of events starting with the
2 failure of the tab actuator to the break up of the airplane
3 in flight.

4 Q Did you ever give any testimony in connection with
5 that case, deposition or at trial?

6 A I never gave a deposition nor did I appear in the
7 trial. It was settled out of court.

8 Q Did you work with any lawyers in that case?

9 A Yes, I did.

10 Q Who was that?

11 A I do not know.

12 Q Did you work through somebody at Cessna?

13 A I worked through the law firm Cessna had employed.

14 Q You don't remember the name of the firm?

15 A No.

16 Q Do you remember the name of the plaintiff in the
17 case?

18 A The First National Bank was the only one I really
19 remember of Mobile.

20 Q They were suing?

21 A They were one of the group. It was their president
22 who was killed in the accident.

1 Q Any other accident cases you have worked on?

2 A No.

3 Q None for Beech?

4 A No.

5 Q None for the Air Force?

6 A No.

7 Q You worked on two prior litigated cases?

8 A That is right.

9 Q Have you ever testified in court?

10 A No, I haven't.

11 Q You have on your resume several reports and papers.

12 A That is correct.

13 Q A couple of these appear to have been written
14 about the F-4 and A-7. Were those done while you were in
15 the military?

16 A No. I was Civil Service at that time.

17 Q That is what I meant, a civilian employee of the
18 military?

19 A That is right.

20 Q You published four papers since you have been at
21 the University of North Carolina State?

22 A Since I have been at North Carolina State, I have

1 only had a paper presented this last week, a comment and a
2 technical note to the journal and a paper to be published
3 this coming April, so it would be four papers within the
4 next six months. All that was prior to.

5 Q So there are additions that should be made to
6 your CV?

7 A When I gave them that, that is all there was.

8 Q The date was the 24th of October. Since that time
9 a paper was given this week.

10 Q So you did not include that paper on this list?

11 A No.

12 Q Nor the one you are going to publish next Spring?

13 A No.

14 Q What are the subject matters of those two papers?

15 A A paper presented this week had to do with a subject
16 critical flutter testing using the feedback approach. The
17 technical comment has to do with a paper published in the
18 October Journal of the AIAA, Magazine Journal of Aircraft,
19 concerning subcritical fluttering of testing, using a random
20 approach.

21 Q When we talk about flutter, we are talking about
22 airborne aerodynamics, are we not?

1 A No. We are talking about structure, weight and
2 mass and unsteady aerodynamics.

3 Q For purposes of laymen who may be hearing this,
4 the jury, for instance, would it be fair when we are talking
5 flutter testing or flutter dynamics, we are talking about
6 plane structure and aircraft and we are talking about air-
7 craft and flutter in flight; is that correct?

8 A You will have to repeat that question.

9 Q We are talking about flutter of aircraft in flight,
10 flutter effects on the aerodynamics aspects of the airplane?

11 A That is correct.

12 Q As opposed to the dynamics of an aircraft in a
13 crash situation?

14 A That is correct.

15 Q You published a paper on static and dynamic stability
16 of a tractor trailer truck.

17 A That is correct.

18 Q Does that have anything to do with what we are
19 talking about in this particular case?

20 MR. LEWIS: I object to the form of that question.

21 Does his paper have anything to do with the events
22 that occurred in this litigation? Is that your question?

1 MR. DUBUC: Does the subject matter have anything
2 to do with the opinions he will give.

3 THE DEPONENT: Are you talking about the laws of
4 physics now?

5 BY MR. DUBUC:

6 Q You published a paper on the dynamics and stability
7 of a tractor trailer test.

8 MR. LEWIS: There is no question pending.

9 BY MR. DUBUC:

10 Q I am wondering if the subject matter of that paper
11 has any relevance to the opinions you have been asked to
12 give in this case?

13 MR. LEWIS: He is asking you about physics or the
14 tractor trailer?

15 MR. DUBUC: I don't have to answer the question.

16 If he does not understand it, I can rephrase it.

17 MR. LEWIS: Do you understand his question?

18 THE DEPONENT: Not really.

19 BY MR. DUBUC:

20 Q What opinions have you been asked just by subject
21 matter to give in this case?

22 A I have been asked to look at aircraft as it descended

1 just before impact and final resting place. That involves
2 equations of motion of the airplane. If you are asking me,
3 does a car or automobile have similar equations of motion,
4 then we are talking about a relationship between object under-
5 going motion of physics. We are talking about Newton's laws.

6 Q Are we not in an aircraft situation, talking about
7 a three-dimensional problem as opposed to a two dimensional
8 problem as you would have with a tractor trailer case?

9 A Again, you must think of the airplane as an
10 airborne vehicle and a ground vehicle.

11 Q If I understand your testimony, there may be some-
12 thing relevant in your paper on the static and dynamic
13 stability of the tractor trailer truck to some of the concepts
14 you were going to utilize in giving your opinion in the
15 case; is that correct?

16 MR. LEWIS: I object to the form.

17 THE DEPONENT: You will have to repeat that question.

18 BY MR. DUBUC:

19 Q Are there concepts described in your paper about a
20 tractor trailer truck that you consider relevant to the form-
21 ulation of the opinions you are giving or are going to
22 give in this C5A aircraft accident case?

1 MR. LEWIS: That are unique to tractor trailers?

2 MR. DUBUC: No, sir, just as I stated.

3 BY MR. DUBUC:

4 Q Can you answer that?

5 MR. LEWIS: I object to the form.

6 THE DEPONENT: The laws of physics apply equally
7 as well to any object. If you are asking me did I learn
8 something by working on the National Science Foundation Grant
9 on this that benefits me later on, then you are also asking
10 me did my first structures point relate to this problem also
11 and it does. Therefore, everything I have had in school
12 from the time I started my aircraft engineering program to
13 date relate to my opinions.

14 BY MR. DUBUC:

15 Q Do I understand, then, there may be something in
16 that paper on the tractor trailer truck which will be rele-
17 vant to something we will be talking about in this case?

18 MR. LEWIS: I object to the form.

19 MR. DUBUC: If you want to object to the form,
20 make your objection to the form. I do object to having you
21 put on the record -- I will take the objection.

22 If I want to explain why, I will ask you to. I
would appreciate it if you would not attempt to coach the

1 witness by going through an explanation of the alternatives.
2 If he understands it, fine. If he does not, fine and if you
3 want to object, fine.

4 MR. LEWIS: I instruct him not to answer that
5 question.

6 MR. DUBUC: I call for the production of a copy of
7 that report, "Static and Dynamic Stability" -- let the record
8 reflect Mr. Lewis is now conferring with the witness.

9 MR. LEWIS: Do you have an objection?

10 MR. DUBUC: Yes.

11 I am calling for a copy of the production of the
12 report listed in his resume, "Static and Dynamic Stability of
13 a Tractor Trailer Truck."

14 THE DEPONENT: That can be obtained.

15 MR. LEWIS: He does not want me to confer with you
16 as to whether I can obtain it or not so I won't confer.

17 MR. DUBUC: You can confer with him after to see if
18 it is obtainable. I realize he does not have it here with
19 him today.

20 MR. LEWIS: With regard to your calling for that
21 document, if you will do what is customary in the past and
22 submit it in writing, we will take it under advisement.

1 BY MR. DUBUC:

2 Q You have also listed, "Captive Aircraft Loads Series
3 General User's Manual." Is there anything relevant in there
4 to the opinions you will be giving?

5 MR. LEWIS: I object to the form of that question
6 and instruct him not to answer unless you will allow me
7 one way or the other to understand the scope of your question.

8 MR. DUBUC: That is very clear.

9 Are you instructing him not to answer that?

10 MR. LEWIS: Absolutely.

11 You don't want me to tell you why?

12 MR. DUBUC: That is a very simple question.

13 MR. LEWIS: I don't want you to go and say I cannot
14 tell you why.

15 MR. DUBUC: I think it is unreasonable to instruct
16 him not to answer.

17 BY MR. DUBUC:

18 Q You have also listed, "F-4 CAL User's Manual."
19 Will that be relevant to any opinions you will be giving in
20 the C5A case?

21 [The reporter read the pending question.]

1 BY MR. DUBUC:

2 Q Would anything be relevant in there? You have
3 told us a lot of things that would be relevant.

4 MR. LEWIS: I want to find out the scope of your
5 question. You don't want me to ask that because you think
6 that is coaching the witness.

7 MR. DUBUC: The scope of the question is clear.

8 MR. LEWIS: He has mentioned physics principles
9 before. If you are excluding them, I have a right to know
10 that.

11 MR. DUBUC: I am asking him if there is anything
12 in that report that he considers relevant, anything including
13 physics.

14 MR. LEWIS: Then he can answer that, if he can.

15 THE DEPONENT: Again, it relates to the physics
16 of the airplane.

17 BY MR. DUBUC:

18 Q So there may be some meaning relevant to the
19 User's Manual?

20 MR. LEWIS: That is in the report but nowhere else.

21 BY MR. DUBUC:

22 Q Do you understand my question?

1 A Not really.

2 Q It is very clear.

3 MR. LEWIS: I object to that and disagree with that.

4 BY MR. DUBUC:

5 Q I am asking whether, in your opinion, knowing what
6 you wrote, since I don't know what you wrote, sir, there are
7 any concepts or descriptive language or principles described
8 in the F-4 CAL User's Manual, User's Manual for the F-4
9 Aircraft published in July 1975 by you that you would rely
10 upon, any information in that report that you would rely
11 upon, either information or principle described in formulating
12 your opinion in this C5A case? Do you understand that?

13 A You use the word principle. In the technical sense
14 you are talking about the basic laws of motion. Each report
15 I have written is based on the laws of motion, laws of aero-
16 dynamics and is included in any aerodynamic and structural
17 work I do, and it is also included in any textbook I have
18 used. So the same principles are in either my textbooks that
19 I have had in my courses or reports I have published.

20 Q So it would be relevant to that extent; is that
21 correct?

22 A That is correct, if you are talking about principles.

1 MR. LEWIS: That is the very reason I instructed
2 him not to answer the questions before because you wouldn't
3 limit it that way.

4 MR. DUBUC: Then I ask for the production of those
5 "Static and Dynamic Stability of a Tractor Trailer Truck,
6 August 1970; the CAL (Captive Aircraft Loads) Series General
7 User's Manual, July 1975; the F-4 CAL User's Manual-User's
8 Manual for the F-4 Aircraft, July 1975; the A-7 CAL User's
9 Manual-User's Manual for the A-7 Aircraft, July 1975," so we
10 can look at them and review some of the principles which he
11 relies.

12 MR. LEWIS: If you will put that in writing, we
13 will certainly consider it.

14 BY MR. DUBUC:

15 Q The next paper listed is, "The Study of the Effect
16 of Store Aerodynamics on Wing/Store Flutter." Is there
17 any writing or principle considered in that report that you
18 would rely upon in utilizing connection with the opinions you
19 will give or have been asked to give in this case?

20 MR. LEWIS: Your question is a general question,
21 the same as your previous question.

22 THE DEPONENT: The same answer again. You used the

1 word principle. You are talking about the principles of
2 aerodynmaics, the principles of structural designs. Those
3 principles were used in formulating my mathematical models
4 which are used in that report.

5 BY MR. DUBUC:

6 Q Also, "The Effect of Store Aerodynamics on Wing/Store
7 Fluuter; A Study of the Effect of Control Surface Aerodynamics
8 on Flutter Analyses, March 1981; A Study of the Effect of
9 Store Aerodynamics on Wing/Store Flutter, April 1981."

10 Would the same answer apply to those?

11 A That is correct. Each of those principles are
12 available in the open literature.

13 MR. DUBUC: I ask for production of those.

14 MR. LEWIS: I will give you the same response. Put
15 it in writing and we will take it under consideration.

16 BY MR. DUBUC:

17 Q Have you looked at any still photographs of parts
18 of wreckage of the accident scene either colored or black
19 and white?

20 A Yes, I have.

21 Q You did not mention those before. You mentioned
22 two movies. Which photographs have you looked at?

1 A My notes say various pictures.

2 Q It may say various pictures but I don't think the
3 record reflects that. You may have just forgotten that.
4 Remember, you are under oath, sir.

5 MR. LEWIS: Why do you keep saying that? Are you
6 suggesting the witness is not telling the truth?

7 MR. DUBUC: I am suggesting he may not be as
8 careful with his answers. He says he has not testified
9 before.

10 BY MR. DUBUC:

11 Q Which pictures did you look at?

12 A I did not count them.

13 Q A hundred? Five hundred? Eight hundred?

14 A It wasn't 800 -- whatever number --

15 Q It was not 800?

16 A It was probably between 50 and 200 and 300.

17 Q Between 50 and 200 and 300?

18 A It was a very large stack and I only pulled out a
19 few I was interested in.

20 Q Of the stack you looked at, there was something
21 that might have been some 250?

22 A If you can say 250 plus or minus 50.

1 Q Two hundred fifty plus or minus 50?

2 A That would be a wild guess.

3 Q Were you told there were other photographs? Just
4 answer yes or no.

5 MR. LEWIS: Is your question, was he told other
6 than the photographs he was looking at there were additional
7 photographs?

8 MR. DUBUC: That is correct.

9 THE DEPONENT: They brought in a box of photographs,
10 had me look through them. I did not ask if there were any
11 more and nobody asked me or no one said there were any more.

BY MR. DUBUC:

1 Q Do you know who selected the ones you looked at?

2 A That, I do not know.. They just brought in a large
3 stack.

4 Q You did not select the ones you were interested in
5 from a larger group. You looked at the ones you were inter-
6 ested in from a group of photographs numbering 250, plus
7 or minus 50; is that correct?

8 A You should not limit it to a number. All it was
9 was a box about this size containing several stacks of
10 photographs and I selected probably 20 or 30 as I went
11 through and set aside that I looked at closer. Whether it
12 was 20, 30, or 50, I did not count.

13 MR. LEWIS: I would like to say for the record,
14 also, that moments before we left the office to come to this
15 deposition, there was produced additional photographs. I am
16 not sure by whom. I believe it was by the government but I
17 am not sure, some of which this witness had an opportunity
18 to very briefly glance at and some of which he has not yet
19 seen.

20 THE DEPONENT: They looked like the other ones. I
21 don't know how you can sort them out, if there is a smaller
22 version of a larger photograph. I couldn't tell if they were

1 the same or not.

2 BY MR. DUBUC:

3 Q Sir, I am showing you a group of photographs
4 marked previously as Plaintiff's Exhibits 3-A through 3-H.
5 I want you to tell me if you have looked at any of these.
6 If you have, I would like to know which ones and, to save
7 time, tell me which ones are significant for the opinions
8 you are going to give.

9 MR. LEWIS: That is two questions.

10 MR. DUBUC: I am trying to save some time. I am
11 trying to help him get out of here on time.

12 We have a large number of photographs. You have not
13 brought with you the ones he brought to you. So we are going
14 through the task of finding out which ones of those which
15 have been produced and marked as exhibits he has looked at.
16 They are in groups of various numbers by deposition numbers,
17 and I am asking him to look at the photographs in separate
18 groups and tell me if he had seen those and considers any
19 of them significant.

20 MR. LEWIS: You acknowledge that is two questions.
21 Even if he has not seen it, you want to know if it is
22 significant.

1 BY MR. DUBUC:

2 Q Have you seen those, Doctor?

3 A If you are asking me did I see a specific photo-
4 graph --

5 Q Those that are in front of you. Have you seen
6 those 7 photographs?

7 A I could not answer that. I have seen photographs
8 of the general area. But I could not testify whether I have
9 seen this specific photograph. I have not seen one that had
10 this statement on it, if that is what you are asking me.

11 Q If I showed you 200 photographs, you are not going
12 to be able to tell me if you have seen those 200 or not.

13 MR. LEWIS: As opposed to subject matter.

14 THE DEPONENT: I looked at it from subject matter.

15 BY MR. DUBUC:

16 Q I am particularly interested in what photographs,
17 whether they are the actual numbered ones or not, as to sub-
18 ject matter in the groups I am going to show you that you
19 consider significant to the opinions you have been asked to
20 give.

21 Do you understand that?

22 A Yes.

1 This photograph is significant.

2 Q Why don't we just make a pile for the purposes of
3 those you consider significant and those you did not consider
4 significant.

5 MR. LEWIS: Do you mean have any relevance to the
6 issues?

7 MR. DUBUC: He understands the question.

8 MR. LEWIS: Significant means different things to
9 different people.

10 MR. DUBUC: They certainly do, but I am only asking
11 as to this witness who is going to give an opinion and, if
12 he thinks they will be significant to the opinions he will
13 give, I want to know.

14 MR. LEWIS: I don't want you later to pull out a
15 photograph and say this witness did not consider it sig-
16 nificant. Do you mean has no probative value whatsoever or
17 is it a dispositive issue, or what?

18 BY MR. DUBUC:

19 Q Did you understand the question? You said you did.
20 If not, I will rephrase it.

21 A Which photographs would I be interested in viewing
22 in doing my type of analysis?

1 Q Yes.

2 A Whether anybody else would want to use it, maybe
3 I wouldn't want to.

4 Q Have you done that, sir?

5 A Yes.

6 Q Would you read into the record the numbers on the
7 back of the photographs?

8 A 3-B, 3-C, 3-D, 3-E, 3-F, and 3-G.

9 Q I show you another set of photographs. These are
10 Exhibits 10-A through 10-K. I would like to ask you to do
11 the same thing with those. Are they of interest to the
12 opinions you will give and I would like to know which ones
13 they are.

14 MR. LEWIS: Take the time you need.

15 THE DEPONENT: Do you want them marked if they
16 contain the same information?

17 BY MR. DUBUC:

18 Q I would like to get the ones segregated for which
19 you have interest, first.

20 MR. LEWIS: You won't answer his question; right?

21 MR. DUBUC: I am going to do that.

22 MR. LEWIS: He asked if you want him to include

1 duplicates and you won't answer that question.

2 MR. DUBUC: I only want the ones in which he is
3 interested.

4 MR. LEWIS: I don't want you to take all the time
5 need but take what you need.

6 MR. DUBUC: I object to your trying to prolong this.

7 MR. LEWIS: I think it is an unfair question you are
8 asking this man.

9 MR. DUBUC: He is a graduate engineer.

10 THE DEPONENT: If you want the same ones repeated,
11 they can be repeated over and over again.

12 BY MR. DUBUC:

13 Q Any one that you have an interest in even if it
14 is a duplicate.

15 MR. LEWIS: Now you will answer the question.

16 BY MR. DUBUC:

17 Q Have you done that, sir?

18 A 10-F, 10-I, 10-J, 10-G, 10-B, 10-C.

19 Q Thank you, sir.

20 A Can you do the same thing for me with respect to
21 this next group of photographs?

22 MR. LEWIS: Including duplicates?

1 MR. DUBUC: Any duplicates, any photographs he
2 has an interest in in connection with the opinions he will
3 give.

4 These are Tarbell Exhibit T-4A through -24.

5 MR. LEWIS: I would like to say on the record
6 that the time is 2:35 and Mr. Dubuc has gone to take a phone
7 call and the witness is prepared to respond to the last
8 question.

9 MR. COBBS: Has anyone told Mr. Dubuc the witness
10 is prepared to respond?

11 MR. LEWIS: Not to my knowledge.

12 MR, DUBUC: Let the record reflect that that was
13 Mr. Oren Lewis, of Mr. Bob Lewis' firm, calling at the
14 request of Judge Oberdorfer relative to certain matters
15 relevant to the Marchetti case and the Judge asked us to
16 confer about it and therefore I did.

17 BY MR. DUBUC:

18 Q I understand you have been through the pictures.
19 Can you tell us which ones of the Tarbell group that I have
20 just described are of interest to you in connection with
21 your opinions?

22 MR. LEWIS: I object to the form. Is your question

1 the same as we originally started off with?

2 MR. DUBUC: Yes.

3 MR. LEWIS: I still object, but go ahead and
4 answer.

5 THE DEPONENT: T4S, T4Q, T4R, T4II, T4HH, T4FF,
6 T4EE -- I am not sure if this is a "T" or a "7."

7 BY MR. DUBUC:

8 Q I beg your pardon?

9 A They look more like a 7 and maybe just a T.
10 T4EE, T4DD, T4CC, T4P; TH0, T4N, T4L; T4M, T4K, it is prob-
11 ably T4J or it could be T4T, T4I, T4H, T4G, T4F, T4B,
12 T4C, T4D.

13 Q T4C, T4D?

14 A Yes, sir.

15 Q Now can you tell me with respect to this group of
16 black and white photographs with respect to Exhibits Tarbell
17 2A through 2K whether any of these photographs are of
18 interest to you with respect to the opinions you are formu-
19 lating?

20 MR. LEWIS: Same question as your original question?

21 MR. DUBUC: Yes.

22 MR. LEWIS: I still object to the form.

1 THE DEPONENT: T2A, T2C, T2J, T2H, T2G.

2 BY MR. DUBUC:

3 Q Same question, same context with this next group
4 of color pictures. These are Tarbell Exhibits 3A through
5 3EE.

6 MR. LEWIS: Again your question is not whether it
7 has any relevance but whethr it is of any interest to him?

8 MR. DUBUC: That is right.

9 MR. LEWIS: I still object to the form of it.

10 THE DEPONENT: Tarbell 1B. It has a date on it
11 10/22/81.

12 BY MR. DUBUC:

13 Q There may be two numbers. Give me both of them.

14 A You have L1B (Timm) date 10/22/81. At the top
15 you have T3A. Then you have T3B, separately L1. You have
16 T3C, T3D, T3E, T3G, T3L, T3I, T3J and L7, T3K, T3L, T3M,
17 additional number L23. You have T3N, additional number looks
18 like L6.

19 Q What was that last one?

20 A T3N, additional number is L6.

21 You have T3Q.

22 MR. LEWIS: For the record, the witness said T3N.

1 The document, in fact, that he is looking at while I am
2 saying this, is T3"0."

3 If you don't want the record to be accurate, Mr.
4 Dubuc, I will refrain from doing it.

5 THE DEPONENT: The quote must mean the alphabetic
6 letter rather than zero.

7 T3R, L-16; T3S and that has an additional L-1A
8 (Timm); T3T, L-17; T3V.

9 BY MR. DUBUC:

10 Q "V" as in Victor?

11 A That is correct. And one is labeled T3W, same as
12 T3I; T3X, L-4; and you have a T3Y, L-3; and T3Z. You have a
13 T3AA, additional L-2; T3BB.

14 Q BB?

15 A That is correct.

16 T3CC, T3DD and T3EE.

17 Q I think those are all of the color photographs we
18 have.

19 I would like to ask you to do the same thing with this
20 group which is black and white which are described as photos
21 from Walker 3, and these are Walker 3-194, also X-41, 193,
22 195, 341.

1 A I would make the statement that 341 is a double
2 exposure. You have two crash sites on it.

3 Q The photo was exposed twice?

4 A That is correct.

5 193, 194.

6 Q Those are the two of interest to you?

7 A I would be interested in the events on 341 but not
8 that photograph.

9 Q I will ask you to do the same thing with another
10 group here. These are Bandy exhibits B-1 through B-36. Would
11 you do the same thing, same question and same request.

12 MR. LEWIS: Same objection.

13 BY MR. DUBUC:

14 Q Would the photographs be of interest to you in
15 connection with any opinions you may be giving or have been
16 asked to give.

17 MR. LEWIS: As opposed to subject matter? That is
18 a different question than you asked before.

19 MR. DUBUC: No, it is the same question.

20 MR. LEWIS: Do you represent, Mr. Dubuc, all these
21 photographs he is looking at relate to the C5A crash?

22 MR. DUBUC: All I can represent is these are the

1 photographs we have obtained from the Air Force.

2 MR. LEWIS: But you are not representing they all
3 relate to the C5A crash.

4 MR. DUBUC: I can't make that representation. I
5 can only make the representation that I received these as
6 photographs similar to the photographs you received from the
7 Air Force.

8 MR. LEWIS: It is my understanding some of them
9 did not relate to the crash.

10 THE DEPONENT: Some of them seem to be an F5 which
11 either sustained battle-type damage or gear-up type landing.

12 These are some Fighter aircraft.

13 Part of the photographs are of a military Fighter
14 and some of them seem to be of the crash. Those of the crash
15 site would be of interest.

16 One is B-36, B-35, L-19; B-33, a marked-out B-34;
17 B-32. It says "darker."

18 B-32, B-31 and L-15; B-30 and L-14.

19 BY MR. DUBUC:

20 Q Would you hand those back to me segregated.

21 A That looks to be an F-5 on there.

22 Q Can I ask you the same question as we go through

1 these black and whites which are marked Exhibit 2A through
2 2II, and tell me if any of those would be of interest to you
3 in connection with the subject matter and the opinions that
4 you have been asked to give.

5 MR. LEWIS: I object to the form of the question.
6 If the photographs would be of interest to him in connection
7 with the subject matter -- is that the same as saying the
8 subject matter of interest to him?

9 MR. DUBUC: No, you have to get the modifier, Mr.
10 Lewis, which includes the subject matter relative to his
11 opinions.

12 MR. LEWIS: In other words, it is your original
13 question.

14 MR. DUBUC: That is correct.

15 MR. LEWIS: I have the same objection.

16 THE DEPONENT: This group is 2GG, 2DD, 2BB, 2T.
17 And it says "Admitted, no objections."

18 2K, 2F.

19 BY MR. DUBUC:

20 Q One last group here.

21 Have you reviewed some photographs with similar subject
22 matter in the last week or so in connection with your

1 consultations before this deposition?

2 A Most of the photographs I reviewed, the information
3 is very similar.

4 Q In connection with preparation for this deposition
5 and also for the opinions you are going to be asked at the
6 trial, have you conferred with any of the other experts who
7 are testifying on behalf of the plaintiffs such as, for
8 example, Doctor Mason?

9 MR. LEWIS: "Conferred" meaning sought opinions?

10 MR. DUBUC: Obtained information or facts from
11 him or discussed your opinions with him.

12 THE DEPONENT: I have expressed my opinions.

13 BY MR. DUBUC:

14 Q To Doctor Mason?

15 A We couldn't be sure who all I expressed my opinions
16 with because I was talking with several people.

17 Q At the time you expressed them to several people
18 but you did not know who they were?

19 A I didn't write their names down.

20 Q When was that?

21 A The only time was Saturday morning in talking to
22 Michael Cohen.

1 Q This Saturday morning?

2 A Last Saturday morning in reviewing the photographs
3 and then this morning.

4 Q Were you introduced to any of the people that were
5 there?

6 A Yes, I was.

7 Q Do you recall being introduced to a gentleman who
8 had an English accent?

9 A Yes.

10 Q Do you recall being introduced to Mr. Cromack at
11 either one of these meetings?

12 A I might have been. I am not that good with names.

13 Q Have you been introduced to Mr. Timm at any of
14 these meetings?

15 A I might have. Like I said, I don't remember names.

16 Q How about Mr. Morain?

17 A Again, it is so fast I was probably engrossed in
18 my thinking and really did not catch names and I didn't
19 write them down.

20 Q How about Mr. Carroll, John Carroll? Were you
21 introduced to anybody who used to be with the MTSB?

1 A I wasn't introduced to anyone where the statement
2 was made he used to be with the NTSB.

3 Q How about Doctor Busby?

4 A Again, the same answer.

5 Q Were these gentlemen present at both of the
6 meetings that you attended?

7 MR. LEWIS: I object to the form of that question
8 unless you are referring to the gentlemen you just named.
9 The witness can't answer based on his answer.

10 BY MR. DUBUC:

11 Q Do you recall seeing the same gentlemen at the two
12 conferences?

13 MR. LEWIS: All of them or any of them.

14 MR. DUBUC:

15 Q Any of them.

16 A There was one who was the same.

17 Q Did both of those meetings take place at the
18 Lewis firm?

19 A Yes.

20 Q Was Doctor Cohen present?

21 A Yes, he was.

22 Q Was Oren Lewis present or Mr. Robert Lewis?

1 A This morning.

2 Q Was Mr. Michael McManus present?

3 A I didn't catch all the names.

4 Q Were there some lawyers present?

5 A I don't know.

6 Q Whom you knew to be lawyers in prior meetings.

7 A Since this was the first meeting, I wouldn't know.

8 Q This morning was the first meeting?

9 A That is correct, the first meeting with more.

10 Q What time did that meeting commence?

11 A Michael picked me up at the motel --

12 Q Michael Cohen?

13 A That is right. He picked me up at the motel about
14 4:45. It would probably be 10 or 20 minutes after that I
15 sat down in the conference room and people drifted in and
16 out. I don't know if you could call it a meeting, as such.

17 Q Were there any physicians present other than
18 Doctor Cohen?

19 A I was introduced to someone who was a physician but
20 I couldn't tell you his name.

21 Q Who presided at the meeting?

22 A As I say, it was not really a meeting. We sat

1 down, we viewed a film and I guess you would call it a meet-
2 ing where we grouped together but all we did was view film
3 together.

4 Q Did anyone make any presentation of facts or
5 opinions? Did anyone give any opinions?

6 A There was no formal presentation, as such.

7 Q Did Doctor Cohen more or less conduct the meeting,
8 the sequence of events?

9 A If you mean did he turn the projector on, yes,
10 he operated the projector.

11 Q Was there any description of the purpose of the
12 meeting?

13 A No, it was just so we could review the film.

14 Q After you reviewed the film, what happened then?

15 A We kind of just drifted into different areas. I
16 started looking through the Lockheed reports. Right before
17 we broke up, he asked me what I got from the Lockheed reports.

18 Q What did you get from the Lockheed reports?

19 A I told him that I was able to use the loads
20 analysis on the aft fuselage and I would probably be able
21 to use the weights report that you mentioned earlier.

22 Q How are you going to use those?

1 A I was looking for a minimum G load.

2 Q Anything else?

3 MR. LEWIS: I object to the form of that question.

4 BY MR. DUBUC:

5 Q Were you looking for anything else?

6 A You mean in the way of stress analysis?

7 Q I don't know what you are looking for. I am trying
8 to find out what you are going to use.

9 A When I requested the reports I was looking for
10 two specific types of information. One was the weight analy-
11 sis on the aircraft, which is contained in the Weights
12 Reports. I was interested in the aft fuselage stress
13 analysis and loads analysis which are included in the large
14 volume of reports that was sent to us.

15 Q Did you find it? Did you find what you were look-
16 ing for?

17 A Yes, I did..

18 Q What did you find?

19 A The stress analysis on the aft fuselage and the
20 tail.

21 Q What about the aft fuselage was of interest to you
22 in connection with what you have been asked to give your

1 opinion on?

2 A It gives me the design limit load of the different
3 sections of the fuselage.

4 Q What sections?

5 A All sections of the aft part of the fuselage.
6 They take it by stations and it is a continuously plotted
7 curve.

8 Q What were those loads?

9 A I don't recall those. I usually don't memorize
10 information off tables.

11 Q Are these the reports you were referring to as the
12 source of that information? You described LG-1US, 54-12-1
13 Volumes 1 and 2 and LG-1US, 54-12-2, Book 1 and Book 2.

14 Are these the ones you looked at?

15 A Internal Loads Analysis, Aft Fuselage Volume 1
16 and Volume 2; Inertial Loads Report for the first C5A air
17 vehicle. Let me check the dates and see if the original
18 published date is 1968.

19 Originally published November 1958. Those would be the
20 basic reports.

21 Let me make sure that the curve I referred to is in here.

22 Q That was going to be my next question, so let's get

1 that on the record.

2 A The curves I referred to earlier are in these
3 reports. These are very similar copies.

4 Q What page is that on, sir?

5 A The Limit Loads Data is given on pages 2.2 through
6 2.7. These are sheer and bending moment for what is called
7 the forward aft part of the fuselage. The second volume
8 contains the additional information.

9 Q The first ones you are referring to are in report
10 Volume 1, LGUS 46-2-2 for the C5A, pages 2.2 through --

11 A 2.7.

12 Q You say in the other volume, which is Volume 2 of
13 the same report, there are some additional data that you
14 found of interest or significance in that same category?

15 MR. LEWIS: Your question suggests he did not
16 find anything else of interest or significance in the first
17 volume.

18 BY MR. DUBUC:

19 Q Is that right?

20 A Most of the information I wanted was contained in
21 this volume.

22 Q That is Volume --

1 MR. LEWIS: He was answering the question and you
2 ended with his answer incorrectly and I object to that.

3 BY MR. DUBUC:

4 Q Go ahead and finish your information.

5 A I was interested in the limit loads of the aircraft
6 loads designed for the aft fuselage and they are contained
7 in this volume.

8 Q What limit loads for the aft fuselage specifically
9 are of significance and interest to you in formulating your
10 opinion as contained in that document that you referred to?

11 I was interested in the bending loads on the fuselage
12 that would be the design bending loads.

13 Q Anything else?

14 MR. LEWIS: What does "anything else" mean?

15 BY MR. DUBUC:

16 Q Anything else with respect to that subject matter
17 on pages 2.2 to 2.7, sheer and bending modes.

18 MR. LEWIS: I object to the form of the question.

19 BY MR. DUBUC:

20 Q You said one of the things of significance to you
21 is design bending loads as contained in pages 2.2 through
22 2.7 of that document; is that correct?

1 MR. LEWIS: That is what I understood the witness
2 to say.

3 BY MR. DUBUC:

4 Q We are talking about pages 2.2 through 2.7, which
5 you have indicated contain some of the information that is of
6 interest and significance to you.

7 A That is correct.

8 Q Those are as to design bending loads for the aft
9 fuselage; is that correct?

10 A That is correct.

11 Q Is there anything else in those charts and pages,
12 2.2 to 2.7, in addition to what you have already told us
13 that is of interest to you?

14 A I would have to look at what they call Summary
15 of their Conditions. I have to look at their reference to
16 their loadings that they give here to determine what con-
17 ditions they are using for these design loads.

18 Q What Summary of Conditions or references are you
19 referring to? What page and what reference are you refer-
20 ring to?

21 A It would be Summary of Critical Conditions, and
22 that is 2.1, it looks like. It says page Volume 2.1. It is

1 prior to the actual graphs of the loads.

2 Q That is also in Volume 1 of Report 46-2-2; is
3 that correct?

4 A That is true.

5 Q Specifically in numbers, what bending loads are
6 you referring to as those of interest to you?

7 A I am interested in the bending loads range from
8 fuselage station around 2200 to fuselage station 2400.

9 Q By numbers, what are those bending loads that are
10 of significance to you?

11 A If you are talking about up-bending or down-
12 bending, they range from values -- you have two sets of curves
13 so you will have to take a bracketing on the up-bending, 50
14 to a little under 75. This is times 10 to the 6-inch
15 pounds. Down-bending is running about 112112.5, 10 to
16 the 6, and it ranges up to fuselage station 2600, T load
17 is about 40-to-50-inch pounds times 10 to the 6th, to a
18 value of over minus 60 times 10 to the 6th.

19 Q What significance to you is the inch pound up- and
20 down-bending loads?

21 A This tells me the limit loads on the fuselage as
22 used in this analysis.

1 Q What significance, if any, would that have to the
2 opinion you have been asked to give?

3 A I can use the design limit loads of the aircraft
4 to estimate a minimum, I guess you could say, a maximum
5 lower-bound G-loading at some particular instant in time.

6 Q Have you done that?

7 A Only just roughing it out because I did not have
8 a calculator with me so I really rounded everything off.

9 Q I am just interested in what you have done so far.

10 A In this case, it would be 8 to 12 G's.

11 Q Is that up or down?

12 A That would be creating compression on the upper
13 sides.

14 Q You have not looked at the lower sides?

15 A I have not computed the bending figure when the
16 tail loading is down.

17 Q Are you in the process of doing that?

18 A I will eventually go into the details of the
19 calculation.

20 Q You have not done that yet?

21 A No, I have not.

22 Q How long will it take you to do that?

1 A Probably less than an hour.

2 Q Less than an hour?

3 A I will have to go through here first.

4 Q When you say "here," what are you referring to?

5 A I am now talking about the loads data. This is
6 the Inertial Loads Report for the first C5A air vehicle that
7 is in Report LG-1US 54-12-1.

8 Q What part or portion of that report you just
9 described will you have to look at?

10 A I am interested in the tail weights data.

11 Q Have you looked at that yet?

12 A Yes, I did.

13 Q What portion or page numbers are those?

14 A I determined that the information I would be
15 interested in --

16 Q You are looking at Volume 1?

17 A It does not indicate on the top part.

18 Q Is that the front page in Volume 1?

19 A Book 1 of 2. The book was too thick and they did
20 not break the report.

21 I looked at sections 2.3, bullet.

22 Q Bullet?

1 A Bullet. That is the furring on the tail.

2 I looked at Section 2.4, the horizon T tail.

3 I looked at Section 2.5, vertical tail, primarily the
4 sections I have looked at up to this time.

5 Q What of any significance to you in those sections
6 have you noted in connection with the opinions you will be
7 asked to give?

8 A It gives you the mass breakdown of the empennage.

9 Q What is that? What are those numbers which are of
10 any significance to you?

11 A Are you asking me for the numbers or why they are
12 important?

13 A I am asking for those that are important to you.

14 MR. LEWIS: Do you want him to give the actual
15 numbers?

16 MR. DUBUC: The numbers that are of significance
17 to him.

18 THE DEPONENT: Table 2.3-I, Bullet and Contents,
19 Mass Data.

20 BY MR. DUBUC:

21 Q What page is that?

22 A Page 2.3-4. Would you like the totals read to you?

1 A Yes, sir.

2 A Weight, 769.4 pounds.

3 Q 769.4 pounds.

4 A The X-bar, Y-bar and Z-bar are indicating a center
5 of gravity, the coordinate system, also. Then, in the
6 front of the report given on page XIV, it indicates what is
7 X, what is Y and what is Z. It also indicates the moments
8 of inertia, the direction MY, MZ, MX. From this information
9 they calculate what is called X-bar, Y-bar, Z-bar, which is,
10 the center of gravity.

11 The center of gravity for the bullet totals X-bar,
12 2895.6; that is given fuselage stations. The Y-bar is 0.0
13 given in the

14 The-Z bar is 786.6 given in water line.

15 Q What was that?

16 A 786.6 given in the water line.

17 You have a moments of inertia, 0.5 for IX, 9.8 for
18 IY, 9.8 for IZ minus 0.4 for IX, Z, and these are starred.

19 Q 0.4 for IZ?

20 A Minus 0.4 for minus X-I-Z.

21 The inertias are starred and indicate these totals are
22 referenced to the bullet totals.

1 Then we go to the table, to the horizontal stabilizer.

2 The contents of mass data. You have two sets of totals.

3 Q What page is that on?

4 A That is on page 2.4-4.

5 Part of it is, the first asterisk indicates these totals
6 include Section 1 and 2 of the bullet, the double asterisks
7 indicate horizontal stabilizer without bullet.

8 There is a difference in weights. Would you like the
9 first set or second set?

10 Q Both.

11 A The first set is 3,449.8 pounds. This is located --
12 the center of gravity is fuselage station 2914.7. The
13 buttline, 133.8, the borderline is 787.7 and then you have
14 inertia values given, IX, IY, IZ, IXY, IYZ -- I mean IXZ,
15 and IYZ.

16 I will read them in that same order -- 23.6, 15.1,
17 57.6, 18.3, minus 1.3, minus 2.1.,

18 You have a second set weight, 3,275.4 pounds.

19 Q What was that again?

20 A 3,273.4 pounds.

21 Fuselage station 2921.3. Buttline of 140.1. ~~Water~~
22 line, 787.5, and again the same intertias as the sequence

1 given earlier, 41.0, 11.5, 51.5, 15.6, minus 1.3, minus 3.1.

2 Those are the triple asterisks:

3 Then we go to the vertical. The data shown for one-
4 half air vehicle.

5 Using the same coordinate system, Table 5.5.1, vertical
6 tail and contents mass data.

7 Q What page is that on?

8 A This is on 2.5-4. Following the same weights
9 center of gravity, inertia sequence, two sets of weights
10 and one including part of the bullet, and one without.

11 The first set 6,571.6 pounds; 2,799.1; minus 0.1;
12 642.8; 94.7; 168.2; 76.2, 54.7.

13 You have the second set of totals 6,151 pounds; center
14 of gravity location 2,786.6; minus 0.1; 633.1; inertia values
15 85.5; 142.9; 59.8; 43.2.

16 That includes the mass data of the empennage that I
17 looked at today.

18 Q Is there anything else that you have to look at
19 in that category?

20 MR. LEWIS: I object to the form of that question.

21 THE DEPONENT: I don't really know what else I
22 want to look at until I have time to go through the reports

1 in more detail. This is just a cursory look. That is what
2 I have looked at so far.

3 BY MR. DUBUC:

4 Q In connection with the opinions you have been
5 asked to give, how are you going to utilize that information
6 you have just given to us?

7 A In looking at a photograph earlier, the way the
8 tail separated from the airplane, that is about the only
9 piece of the structure or one of the pieces of the structure
10 that I feel I can obtain some information from.

11 Mass data of the tail, so I can calculate the bending
12 moment on the fuselage. I know a design bending moment they
13 are designing to, so I will attempt to equate those two. I
14 will then look at some minimum type deceleration that would
15 give me that bending on.

16 Q Did you say you would look at some bending type --

17 A Deceleration.

18 Q What data in addition to what you have already
19 told us would you need to get the minimum deceleration
20 factor?

21 A I would need the layout of the airplane given on
22 page 2.1-30.

1 Q Is there any other data you would need?

2 A Unless you are referring to principles, this is
3 probably sufficient data -- principles of physics.

4 Q What specific principles of physics will you
5 utilize in making the computation you have described?

6 A I would probably use Newton's Laws.

7 Q Which ones?

8 A That is the law.

9 Q Which Newton laws?

10 A Newton's Law, F equals.

11 Q Force equals mass times acceleration?

12 A That is right.

13 Q What mass are you using, the weight of the
14 empennage?

15 A For determining the load on this particular section
16 of the fuselage, I would use fuselage weight.

17 Q Would you consider the weight of the remaining
18 fuselage?

19 A A small section -- that area after the break.

20 Q What factor or number would you use for the A
21 part of the formula, acceleration?

22 A That is what I am trying to calculate.

1 Q What factor would you use for the F?

2 A That is what this is.

3 Q You are going to divide this information after you
4 have computed and refine it by the weight of the empennage
5 to get the acceleration? Is that a rough description?

6 A You know a design load of the airplane. So I
7 have a force. I also have weight here, which is a force, so
8 I convert it, have the mass data on the tail so I can
9 develop a moment about the combined centroid of the aft
10 components of the tail. Once I know failure bending moment,
11 I can determine a minimum type acceleration.

12 Q Is that the opinion you have been asked to give,
13 a minimum deceleration?

14 A I was not specifically asked to generate a specific
15 number. I was asked to look at the problem and this is
16 something I thought about trying to do.

17 Q Have you done this before?

18 A What you are saying is this procedure has been
19 done before.

20 Q Have you done this procedure before?

21 A In designing, yes.

22 Q In reconstruction, such as you are attempting to

1 do here with respect to an accident, have you personally
2 done this before?

3 MR. LEWIS: I object to the form of the question
4 to the extent you are making a statement as to what he is
5 trying to do.

6 BY MR. DUBUC:

7 Q The question is have you done it before?

8 A I have calculated inertia road --

9 Q In reconstruction?

10 A No, not in reconstruction.

11 Q You have never done this process as part of a
12 reconstruction of bending forces and ultimate acceleration
13 forces, is that correct, in a reconstruction after mass?

14 MR. LEWIS: I object to the form.

15 THE DEPONENT: I have always done it in the prede-
16 signing of an aircraft.

17 BY MR. DUBUC:

18 Q In that case, you would not have any pictures to
19 look at as to failure sequence or components or parts.

20 MR. LEWIS: I object to the question.

21 BY MR. DUBUC:

22 Q You have done it before as a pre-design process;

1 is that correct?

2 MR. LEWIS: If you are putting two statements
3 together to make a question, I object to it.

4 THE DEPONENT: The techniques for doing stress
5 analysis assumes particular failure mechanisms that allow
6 you to do the stress analysis, so you in a sense are doing
7 a design process, you must assume how the structure will
8 fail, do your analysis on those failure mechanisms to
9 determine a minimum material requirement of the type of
10 material. You must always assume a failure mechanism first
11 before you do your stress analysis. Once you are complete,
12 you turn around and insure that you have included all pos-
13 sible type failures for this given load.

14 Q That is in connection with the pre-design perspective
15 that affects the mode analysis or something of that kind; is
16 that correct?

17 A That is correct.

18 Q Here we are talking about a retrospective recon-
19 struction of the same thing; is that correct?

20 A That is correct.

21 Q You have not done that specific retrospective
22 reconstruction, yourself, before, have you?

1 MR. LEWIS: Is that as opposed to calculations?

2 THE DEPONENT: Have I reconstructed --

3 BY MR. DUBUC:

4 Q Yes.

5 MR. LEWIS: Has he done the calculations?

6 BY MR. DUBUC:

7 Q Reconstructing from a circumstance or set of
8 circumstances with the pre-design data for an accident
9 situation where you are reconstructing the acceleration factor
10 that you are seeking to reconstruct in this case?

11 MR. LEWIS: I object to the form.

12 THE DEPONENT: I have not used this type of recon-
13 struction with an airplane before with this type F-equal
14 mass.

15 Q You mentioned a photograph. Did you see a
16 photograph containing the subject matter with respect to
17 the empennage that you referred to when you said you had
18 seen a photograph of the wing tail section?

19 MR. LEWIS: I object to the form.

20 BY MR. DUBUC:

21 Q That is today.

22 A Several of the photographs in there just show the

1 empennage, several different angles.

2 Q Other than the view of the empennage, is there
3 anything specific in any of the photographs you viewed, as
4 far as individual elements that would be part of the process
5 of the computation you are going to make?

6 MR. LEWIS: I object to the form of that.

7 THE DEPONENT: At the present time, I have not
8 looked into these individual elements. They are just con-
9 tained there.

10 Q Approximately how long is it going to take you
11 not only to look at the data but to review photographs and
12 make a computation to the extent that you would be prepared
13 to give a final opinion?

14 A Until I look a little more deeply, I couldn't say.
15 It would be just initial analysis, obtain the bending
16 moments, their design, assume some failure mechanism. I
17 may not have to concern myself with the failure of mechanism.

18 Q Have you formed, as of this moment, any opinions,
19 final opinions to reasonable scientific certainty as to
20 the deacceleration forces on this aircraft?

21 MR. LEWIS: You are asking for a final opinion?

22 MR. DUBUC: Yes, sir, the final opinion he will give

1 in court.

2 THE DEPONENT: There is no way with any certainty
3 that the deacceleration loads from this point to first touch-
4 down to final touchdown can be determined accurately.

5 BY MR. DUBUC:

6 Q There is no way, in your opinion?

7 A That is correct.

8 Q The process you have been asked to go through in
9 forming an opinion to determine the deacceleration loads
10 or to reach a final conclusion that there is no way to do
11 it?

12 MR. LEWIS: I don't understand the question so I
13 will object to the form.

14 BY MR. DUBUC:

15 Q Do you understand the question?

16 A I will look at the deacceleration in the realistic
17 dynamic sense, using time is distance, since time is a
18 missing element we would not be able to determine accurately
19 any point in there.

20 What I am going to try to do looking at various struc-
21 tures of the aircraft is to determine some upper minimums,
22 some particular instances. Where these occurred, I cannot

1 say. All I know is if the structure failed, I can take the
2 mass data, I can generate a moment and I can determine some
3 load failed the structure. That will give me a minimum
4 value.

5 The rate that failure occurs, I have no information on
6 that, so under much higher G loading, but I can't determine
7 the upper value. I can only determine the lower value.

8 Q You say you can't determine the rate of occurrence;
9 is that correct?

10 A That is correct.

11 Q And time of onset of deacceleration forces have an
12 effect on the amount of the force as well as the rate, do
13 they not?

14 A I am not sure what you mean by "time of onset".

15 Q You mentioned time is one of the limitations here.

16 A You do not have an acceleration time history. If
17 you had that, you could integrate the equation very quickly
18 and determine the maximum G load. You would have it. You
19 do not know intermediate velocities and the touchdown on
20 the west side to some final stopping point. Without inter-
21 mediate velocities with the distances given there is no way
22 of determining accurately any peak accelerations.

1 The average acceleration would give you no information.

2 Q But you are seeking peak acceleration?

3 A I am looking for peak accelerations, that is
4 correct.

5 Q Based on your opinion, sir, based on what you have
6 done to date, would the average and/or peak -- I understand
7 you can't compute the average -- but the average and/or
8 peak deceleration as being considered cumulative --

9 Strike.

10 In your opinion from what you have reviewed so far,
11 would the peak deaccelerations on the components of the
12 C5A involving this accident be the same in each of the
13 areas or components of the aircraft?

14 A Probably not, the airplane is too long.

15 Q Would you agree the peak deacceleration forces on
16 the tail or empennage at one end of the aircraft would be
17 different than the peak deaccelerations, say, on the cockpit
18 forward into the aircraft which is at the other end under
19 the circumstances of this landing?

20 A Yes.

21 Q You would agree with that?

22 A Yes.

1 Q Would you also agree those forces might be dif-
2 ferent in different other components depending on how far
3 distant they are, for example, from the tail in the com-
4 ponent construction of the aircraft?

5 MR. LEWIS: I object to the form of that as well
6 as the last question to the extent you are asking for pos-
7 sibilities.

8 He can answer, if he can.

9 THE DEPONENT: There is no way of determining
10 because you have a very large, massive structure and the
11 entire thing can flex, so the G loading would probably be
12 very different at different locations. They are going to
13 travel in a wave form so all you can do is make some
14 rough calculations.

15 Q Other than the G loading, have you been asked to
16 formulate any other opinions with respect to the circumstances
17 of this accident? When I say that, I mean as to such things
18 as to the atmosphere or the potential hypoxia effects, if
19 any, at altitude during decompression or the potential decom-
20 pression effects upon an environment as a result of de-
21 compression, or anything of that nature?

22 A No, I have not.

1 MR. LEWIS: You are talking about the effect of the
2 forces on the human body. Is that what you are asking?

3 MR. DUBUC: The environment.

4 BY MR. DUBUC:

5 Q You will not be giving an opinion on that?

6 A No.

7 Q You mentioned a diagram, a wreckage diagram,
8 a distribution parts diagram; is that correct?

9 A That is correct. It was an Air Force-generated
10 document.

11 Q You also mentioned something about seating
12 diagrams or seat diagrams.

13 I will show you what has been previously marked as
14 Exhibit D-9 for identification. Is that the wreckage dis-
15 tribution diagram you previously referred to?

16 A Yes, this is the one I have seen.

17 Q What significance or use is this diagram to
18 what you are preparing in connection with your opinions,
19 if any?

20 MR. LEWIS: I object to the form.

21 What significance or use?

1 BY MR. DUBUC:

2 Q Have you looked at this diagram?

3 A Yes.

4 Q Have you used it for any purpose?

5 A I have used it as others before in calculating
6 some average g load, but I used various distances. In
7 viewing the film, I did not think the diagram looked correct.

8 Q What was it about the film that led you to notice
9 or believe that the diagram was not correct?

10 A The tracks in the area really do not seem to be
11 as long as indicated.

12 Q Indicating the tracks on the troop compartment?

13 A They seem to be shorter, and the tracks on the
14 upper flight deck seem to be shorter. Until I could either
15 measure the distance using some photograph and get a better
16 estimate of it or look at the photographs---

17 Q Have you seen any photographs that, in your opinion,
18 would permit you to do that?

19 A They are probably in that set you have which shows
20 long tracks. By using a drawing of the fuselage with the aft
21 compartment in it, I would get a scaled distance and try to
22 step off the distance. But it would be in keeping with the

1 inaccuracies of doing deacceleration over these distances.

2 Q How would you go about measuring that on a phot-
3 graph?

4 A If I was roughing it out, I would just take a
5 compass and set it on the distance because, hopefully, the
6 projection is at as much of an angle that it would not de-
7 stroy it too badly. But my numbers are going to be so bad
8 in trying to do any kind of calculation because this shows
9 a disruption of tracks. If you really did the analysis
10 correctly, you don't know velocity at this point to use at
11 this point. It is not a continuous thing.

12 Again, it is the element of time. You have three
13 unknowns. It is a kind of guesstimation.

14 Q You said you had made some rough computations of
15 average g's?

16 A I made, I believe, just one using used distance.
17 It is Turnbow's factor of 3.

18 Q You used Turnbow's factor of 3?

19 A I assumed since he has knowledge of the terrain,
20 I would just take and multiply my number that I got using
21 shorter distances, because he indicated, I believe, in his
22 report fairly flat, no problems, and in looking at the

1 pictures you have shown me, there is a heel that the thing
2 impacted, so I assume there---

3 Q Are you familiar with Dr. Turnbow's work prior
4 to consultation in this accident?

5 A I am not familiar with his part init. I am
6 familiar with the NASA program to do crash-type analyses.
7 There was some of that done at Beech in validating crash
8 data.

9 Q Have you seen the factor of 3 used before?

10 A No, I haven't.

11 Q Have you see any other factors used before?

12 A No, I haven't.

13 Q When you say you have seen it, you saw it in
14 something you read when you were at Beech?

15 A Not the factor of 3.

16 Q Not in the NASA program?

17 A Each had the Lockheed crash, and to use our type
18 of aircraft, we had to validate the program; and in validating
19 the program, we did some crash studies.

20 Q Did you work on those?

21 A No, I did not.

22 Q You did not work on those?

1 A No.

2 Q You just read that something was done?

3 A That is correct.

4 Q You say you made these computations. Did you do
5 those in your head or did you do them on paper -- the average
6 g forces?

7 A You would probably call it doodling. I am sure
8 I wrote something down or punched it on the calculator. There
9 is no hard copy of it, if that is what you mean.

10 Q Did you doodle on the copy of D-9 that you had?

11 A No.

12 Q Did you do it on a separate sheet of paper?

13 A I probably wrote down F equals MA because that
14 is where I always start from, and then I write down $DADT$ is
15 equal to the acceleration, and I work down from there, so
16 I usually go through a quick derivation. I don't try to
17 memorize the final formulation given in the reports.

18 Q Did you write that down on a piece of paper at
19 one time?

20 A I probably just punched out the numbers on a
21 calculator.

22 Q When did you do that, sir?

1 A Probably some time this week in a motel in New
2 Orleans.

3 Q Do you still have that paper?

4 A No, I don't.

5 Q Other than what you have described as to the
6 tracks indicated on exhibit D-9 as to the troop compartment
7 and the flight deck, is there anything else on D-9 that you
8 noticed from the picture or the movies or any other source
9 that you felt were not accurate?

10 A I would have to look closer.

11 Q Go ahead and take your time.

12 A There is not much here.

13 Q Do you want to see more of the pictures?

14 A They don't show a density of wreckage which is
15 kind of misleading here. I see more wreckage on what is
16 called or what they term second impact. It looks like
17 tracks on the ground. So, the density of wreckage is much
18 higher, say, in the region just forward of it than it is
19 in the region behind it. This does not really give me a
20 feel for density.

21 Q Just so that I can record this, I want to be sure
22 I understand, because I am not sure I am following you.

1 Would you take this red pen and tell me again
2 what you feel is an inaccuracy as to the wreckage and
3 show me the area by circle or square or however you want
4 to mark it.

5 MR. LEWIS: I object to the form of the question.
6 Are you asking him to use his recollection as to what he re-
7 calls about it?

8 MR. DUBUC: Yes, what he recalls about any
9 inaccuracies.

10 THE DEPONENT: My recollection seems to me to be
11 in looking at that, if you want to double cross-hatch in the
12 region, probably this region seemed to have more debris
13 than, say, this region.

14 The tracks seem to be started maybe in that
15 region. They seemed much heavier here. This region without
16 the tracks seemed to extend further.

17 Q Would you show on there either by circle or an
18 arrow -- I think you had better define it by line because
19 it is pretty hard to see with that hatching. Show the area
20 that you feel is the larger density of wreckage of the
21 debris area.

22 A Right in this region. I would have to go back and

1 look carefully.

2 Q You also, sir, indicated something about where you
3 thought the tracks started. Put those in in red.

4 MR. LEWIS: Is your question for him?

5 THE DEPONENT: Right here.

6 MR. LEWIS: If you are attempting to use this
7 diagram for any form of accurate distances, I object.

8 Are you talking about the relative distances?

9 MR. DUBUC: I am just asking for his best recol-
10 lection.

11 MR. LEWIS: I want to make sure he is not marking
12 distances in any accurate form at all.

13 BY MR. DUBUC:

14 Q Could you indicate on there where, in your opinion,
15 from your best recollection of what you have reviewed, where
16 the tracks start, and I think you said different intensities
17 as to the troop compartment and the flight deck.

18 MR. LEWIS: I object to the form of that question.

19 If your question for him to indicate on this dia-
20 gram where he thinks the tracks actually started? That is
21 an objectionable question.

22 THE DEPONENT: I could only guess. I think they

1 start much later than from this small circle where they
2 indicate. How much later, we would have to sit down and
3 work it out.

4 BY MR. DUBUC:

5 Q You also referred to another track running from
6 the dike. I am not sure what you referred to. You referred
7 to another form.

8 MR. LEWIS: I object to the form.

9 THE DEPONENT: What do you mean by other track?

10 BY MR. DUBUC:

11 Q Is there another track indicated from what you
12 see on D-9 which shows portions of the aircraft prior to the
13 tracks that are shown on there as to the troop compartment
14 and as to the cockpit?

15 MR. LEWIS: I object to the form of that.

16 BY MR. DUBUC:

17 Q There is no other track indicated on D-9.

18 MR. LEWIS: That is the most incomprehensible
19 question I have ever heard.

20 BY MR. DUBUC:

21 Q Do you understand what I am asking you, Doctor?

22 A No.

1 Q With respect to ExhibitD-9, you did say that you
2 used that for some rough computations or distances to find
3 rough computations of average g's; is that correct?

4 A That is correct.

5 Q How did you do that, sir?

6 A I did it using the same method that was used
7 by Dr. Turnbow, the only difference being differences in
8 distances.

9 Q Can you tell me what you did, without referring
10 to Dr. Turnbow, if you can. I want to know what you did
11 in making your computation?

12 A As I said, again, I started with DV equals DT
13 which is equal to A. I set the equation DV equal to ADT
14 integrated once. I got V^2 , minus V_1 is equal to the AT.
15 T is an indication of time.

16 Q What is D?

17 A It is a derivative; taking a change in velocity
18 with respect to time is equal to acceleration. This is
19 the basic formulation that has been used, assuming accel-
20 eration is not a function of velocity.

21 Q Did you use time?

22 A That is the first equation. You then assume the

1 change in distance with respect to time is equal to velocity,
2 constant velocity. You then can take the information earlier,
3 DS derivative of distances S with respect to time is equal
4 to velocity. You can then say velocity is given to me
5 by AT above. I integrate that once more. I get S2, minus
6 S1 is equal to AT squared over 2. I take the first equation
7 and solve acceleration for time. I can substitute that
8 in the second equation and essentially I have Dr. Turnbow's
9 formula. So, I have his formula worked out in my steps.

10 Then I take the information of the distance,
11 start at some initial velocity. Going back to the Air Force
12 weather records that day -- and I did not use exact velocity --
13 indicated a wind of 15 knots at 130°. So, I used a slightly
14 different velocity because they did not count the relative
15 wind speed with respect to ground speed. It is about a 70-
16 knot component.

17 Q Doctor, you say you put a wind velocity and com-
18 ponent into this. Can you show on Exhibit D-9, say, 130 at
19 15 knots what direction the velocity is belowing?

20 A We are going from east to west, so the way the
21 weather reports are given, 130 at 15. This is 90° and you
22 are talking about this 45. It is slightly less than that.

1 Q The wind is blowing in what direction? In the
2 direction of the arrows that you put on there?

3 A The airplane is landing in that sense, and the wind
4 is blowing from 130.

1 Q Did you note on there wind?

2 MR. LEWIS: This is just a general direction?

3 MR. DUBUC: Yes.

4 THE DEPONENT: That is given in the sequence
5 weather reports.

6 BY MR. DUBUC:

7 Q In other words, the wind is a tail wind?

8 A One hundred thirty at 15, I believe, is the way
9 the reports show. So the airplane was taking off into the
10 wind and went into the wind to give you a relative slower
11 ground speed.

12 Q In this case it is landing with the wind?

13 A That is correct.

14 Q Let's take the troop compartment. In making the
15 average G computation, how did you determine the distance
16 part of that formula?

17 A I just made a rough estimate.

18 Q Can you point to that?

19 A I assumed the first leg was accurate. Having done
20 no detailed calculations, I am not sure exactly how accurate
21 this is. I just took an estimation of this distance from
22 the troop compartment to here and then I made an estimate.

1 Q Could you show on there the first point in that
2 distance in red and mark it in red, if you would, please.

3 MR. LEWIS: You are asking for the rough average
4 deceleration, assuming it decelerated on an average rate?

5 MR. DUBUC: Yes, sir.

6 BY MR. DUBUC:

7 Q Initial point?

8 A What I did was take Mr. Turnbow's report. He gave
9 some distances like this. He gave a measure. What I did
10 was look at the starting and end point, I took an intermediate
11 point and reduced it by some amount.

12 Q Would you indicate the intermediate point?

13 MR. LEWIS: You are not asking for an accurate
14 interpretation.

15 THE DEPONENT: It is somewhere in that region.

16 BY MR. DUBUC:

17 Q Can you give us some indication where the inter-
18 mediate point is? This is the first time we have heard
19 about intermediate.

20 A I am not sure where I used it. I did not really
21 feel you could use average accelerations so I was just working
22 through it to get some of the numbers.

1 Q As far as distance is concerned, you have two
2 arrows drawn on there, one with an arrow pointing up toward
3 the dike area; is that correct?

4 A I am not sure where he actually started his. I
5 used his boundaries.

6 Q You just used them from Doctor Turnbow. You did
7 not make any independent determination yourself?

8 A I did not feel it was really worth the effort of
9 calculating some average G loading formula that really does
10 not hold for this case.

11 Q With respect to your determination of distance,
12 have you formed any opinion as to whether the first point of
13 impact with the ground as opposed to, say, the dike which
14 was something else, the aircraft first made on the west side
15 of the Saigon River as indicated in that diagram, D-9?

16 A No, I have not. I just used the distance.

17 Q Other than what you described as the debris area
18 as being slightly different in your viewing of the pictures --

19 MR. LEWIS: I object to the form of that question.

20 BY MR. DUBUC:

21 Q Is there anything else on D-9 which, in your opinion,
22 recalling what you can from what you looked at that you believe

1 is not accurate?

2 A I did not say the debris area was not accurate. I
3 said the debris area did not indicate relative quantities.
4 Their debris area is probably all right. I can't say that.
5 What I thought I was saying -- and maybe I missaid it -- was
6 this debris marking does not indicate a density of debris.
7 Everywhere a piece fell, they drew an envelope around it.
8 To be of more interest to me, I would have to see densities
9 here which would be significant to me. I would now have to
10 determine density. As far as their marking in debris, I can't
11 say one way or the other.

12 The accuracy discussed was the tracks. That is
13 the only thing I said about accuracy. I felt that the depth
14 in this region I could see on the movies and on the photographs
15 seemed to be very strong in these regions. What these actual
16 dimensions are, we would have to get a very good photograph
17 and take into account the position of the observer.

18 Q Have you ever made any such photograph calculations
19 of distance?

20 A I would not set out to make those calculations.
21 I would make a rough estimate.

22 The distances we are talking about and the

1 inaccuracies in using these types of distances are so -- if you
2 misuse the equation, you are talking about larger areas anyway,
3 so making minute detailed calculations of a distance is not
4 going to help you. If you do not know timing information
5 in here, then it is not really going to do you that much good.

6 The basic equation of motion and the assumptions
7 that they are using in the average deacceleration are not
8 substantiated in this type of analysis. You do not have a
9 constant g deacceleration.

10 Q So, you can't really get accurate measurements with
11 photographs; is that correct?

12 MR. LEWIS: I object to the form of that question.
13 That is a total misstatement of what he said.

14 BY MR. DUBUC:

15 Q Have you ever attempted to make measurements with
16 respect to tracks such as these to utilize in connection with
17 a deceleration?

18 A I said earlier that I haven't, and I would not take
19 it upon myself to do that.

20 Q You are not qualified to do that; is that correct?
21 That is not part of your area of expertise?

22 A No. I am a structures engineer.

1 Q In your experience, have you ever seen that done?

2 A I have seen very accurate data obtained from movie
3 films with cameras on store separation. It is called photo-
4 grammetry.

5 Q In order to do that, do you have to know the camera
6 angle and the height of the camera?

7 MR. LEWIS: I object to the form if this witness
8 does not know how to do it.

9 THE DEPONENT: I did not do the analysis. I just
10 saw the machine that was used to do it.

11 BY MR. DUBUC:

12 Q When did you do that?

13 A I didn't do it.

14 Q I thought you just said you attempted to do it.

15 Where was the machine you saw that was used to do it?

16 A At DLJC.

17 Q Were you involved in that study?

18 A I did the aeroelastic work in the Compatibility
19 Branch in the captive loads form.

1 Q Do you recall whether in connection with that
2 analysis and the work that you did, while that was important
3 to the Air Force, the camera angle and height of the camera
4 was known to the group that was doing the study?

5 MR. LEWIS: I object to the form of the question.
6 You are asking this witness for an opinion in which he is
7 not an expert.

8 MR. DUBUC: I am asking him if he knew that factor
9 was known.

10 THE DEPONENT: If I was going to do trig, I would
11 like to know it. I saw the cameras set up, and I saw them
12 reducing the film.

13 MR. DUBUC: We will take a break here.

14 [A recess was taken from 3:20 to 3:40.]

15 MR. LEWIS: Let the record reflect it is approxi-
16 mately 20 minutes of 4. I do want to call your attention to
17 the fact, Mr. Dubuc, the witness has to leave around four
18 o'clock. Although it was a perfectly reasonable break, it
19 was about 20 minutes long.

20 MR. DUBUC: In addition to breaking to eat, I also
21 happened to respond to some questions from Mr. Connors as a
22 result of a call from Mr. McManus of your office. I just
want the record to note that.

1 MR. LEWIS: I am not objecting. I just wanted
2 to note that.

3 BY MR. DUBUC:

4 Q You returned to Doctor Turnbow's report. You have
5 reviewed it, have you not?

6 A Yes.

7 Q In fact, you said you took some distances and some
8 factors from it.

9 MR. LEWIS: I object to the form of it.

10 BY MR. DUBUC:

11 Q Have you reviewed Doctor Turnbow's report?

12 A Yes.

13 Q It is Exhibit D-1303.

14 Would you tell us, sir, is there anything in
15 Doctor Turnbow's report that you disagree with?

16 MR. LEWIS: I object to the form of that question.
17 It is just so vague.

18 THE DEPONENT: I looked at his Appendix I and II.

19 BY MR. DUBUC:

20 Q Appendix II?

21 A That is his calculation.

22 Q I have seen Appendix I, Roman I. Is that what you

1 are referring to?

2 A It is kind of blurred. He has Appendix II, showing
3 650 yards, 1950 feet. I looked at that. I looked at his
4 overall writing and his contact.

5 Q The question is, in looking at the overall writing,
6 Appendix I, what, if anything, did you disagree with?

7 MR. LEWIS: I object to the form of that question.
8 If you want the witness to read this entire document, I will
9 be happy to have him do it.

10 MR. DUBUC: I understand he has already read it.

11 MR. LEWIS: You are engaging in a memory contest.
12 If you want to ask him what he recalls, I have no objection
13 to that. You are asking for a declaratory answer.

14 MR. DUBUC: He indicated he had read it. He did
15 not bring his notes with him. I am trying to reconstruct,
16 since you did not choose to comply with the notice.

17 MR. LEWIS: Again, my lack of response to your
18 statement is no indication of my agreement. I still object.
19 to the question as unfair. If you are asking the question
20 in the frame of him giving a recollection, then I have no
21 problem with it. Otherwise, I would ask the witness to read
22 the document.

1 MR. DUBUC: The written portion is only two and
2 a quarter pages long, actually probably two and a half pages
3 long, a conclusion paragraph and a one-page diagram. We
4 appear to have an intelligent witness.

5 MR. LEWIS: Does it include raw data as well as
6 conceptual or opinion types?

7 MR. DUBUC: The question includes what is in the
8 question.

9 MR. LEWIS: It is such a broad, vague question, I
10 think he has a right to know the answer to that.

11 MR. DUBUC: If you want to include the assumptions
12 and conclusions, too, fine, do that, too.

13 THE DEPONENT: In his general mention in Contact
14 2, he talks about his --

15 BY MR. DUBUC:

16 Q This is under the heading Contact No. 2.

17 A Contact No. 2. He talks about strongly indicative
18 of long duration long level constant deacceleration in the
19 cockpit and troop compartments.

20 Q What subparagraph?

21 A I feel there is no measuring --

22 Q What subparagraph is that?

1 A Subparagraph D there is no mention of impacting
2 of the heel, as indicated by films and photographs.

3 Q Anything else?

4 A Maybe our engineering judgment is different -- in
5 drawing his conclusions he has applied the formulation I
6 equals G squared over 46.4 times; where S is given as a
7 deacceleration distance, velocity. V is the velocity of feet
8 per second.

9 He used 270 knots.

10 Q You disagree with that?

11 A Not the formula.

12 I disagree with the concept of using constant
13 acceleration for this particular problem.

14 Q Anything else?

15 A In my opinion, in looking at the photographs, I
16 would use a shorter distance. I would use an adjusted
17 velocity to include the air speed, the wind.

18 Q By a shorter distance, do you mean a shorter
19 distance than the 1950 feet used in Appendix I?

20 A As discussed earlier, I indicated -- he does not
21 have a page number but he shows 650 yards, 1950 feet. He
22 calculated his over-the-total distance from what he has as

1 the initial second impact point to the stopping distance of
2 the troop compartment. I looked at some various distances.

3 Q What figures would you use?

4 A I could not give you that accurately. In fact, I
5 would nt even worry that much here with a distance because
6 the basic formulation to get to this equation assumes a con-
7 stant deacceleration.

8 Q I understand that. My question is, what figures
9 did you use?

10 Q I would just use---

11 A For distance.

12 Q I have a couple of different distances.

13 Q What are those distances?

14 A I could take the stopping point, say, at the skid
15 marks on the second impact, you have a black region and you
16 have additional skid marks.

17 What is that distance? "

18 Q I do not know.

19 Q Any other distances?

20 A I don't even recall what the numbers would be. I
21 would just try shortening the distance.

22 Q Shortening by how much, sir?

1 A By any set of numbers. You could use 100 feet
2 just to get a feel for what the deacceleration would be doing
3 for various distances.

4 Q Any set of numbers?

5 A Initially.

6 Q Can you give me a set?

7 A I don't recall the numbers I specifically used. As
8 I said, I just had the calculator there and I was looking at
9 the G's average force for various distances.

10 Q You don't remember the numbers you used?

11 A No.

12 Q But you disagree with his numbers?

13 A I feel his numbers would be adequate but he did
14 not include some point in here which did not seem to be
15 deacceleration. I disagree with his formula in that it
16 assumes a constant deacceleration.

17 Q Is there anything else you disagree with?

18 A I can't make any statement whatsoever to what you
19 would call human tolerance to G acceleration. My area is
20 strictly structures and structural diagram.

21 Q You are not qualified in the area of human tolerances?

22 A Not the area of human injuries.

 Q Your expertise does not include that?

1 A My expertise is structures and structural dynamics
2 and anything I worked on concerned with the basic airplane
3 structure.

4 Q Is there anything else you disagree within Doctor
5 Turnbow's report, Exhibit 1303?

6 A Not that I can see from just this quick reading.

7 Q This is not the first time you have read it?

8 A I was looking through it very quickly on the other
9 readings since I basically disagreed. The details he goes
10 into really did not interest me that much.

11 Q This is the report you have had for over a week
12 now; is that correct?

13 A Yes.

14 Q Have you had occasion, sir, to review Mr. John
15 Edwards' report and calculations, Exhibit D-1298? Have they
16 shown that to you?

17 A I have seen his deposition.

18 Q My question is directed to what I just put in front
19 of you, Mr. Edwards' Exhibit D-1298 as to summary of calcula-
20 tions of G forces. My question is, have you seen that before?

21 A The table here looks familiar.

22 Q Take your time.

1 A I vaguely recall something like that because I
2 remember report numbers.

3 Q Was that on your list?

4 A I don't believe so. I remembered his numbers. I
5 don't know if he referred to something like this. He had
6 done some calculations he discussed in his testimony.

7 Q I understand that. That is a separate piece of
8 paper.

9 My question is simply related to the exhibit I
10 put in front of you.

11 MR. LEWIS: By asking by exhibit number I don't
12 know if the witness is trying to say it may have been attached
13 to a deposition.

14 THE DEPONENT: I don't believe it was. If it is
15 attached to the deposition they sent me, I don't recall it.
16 I would have to look through the end of the deposition.

17 BY MR. DUBUC:

18 Q You don't have that with you so you can't do that;
19 is that correct?

20 A That is correct.

21 Q I have asked you some questions about Doctor Turnbow's
22 report and you said you disagreed with some things in there.

1 Have you had an opportunity -- because you don't know if
2 you have seen this so you couldn't tell me whether you agree
3 or disagree with some things Mr. Edwards report?

4 A In his original discussion he talked about using
5 an average G also.

6 Q In that report you would find some peak G records,
7 would you not?

8 MR. LEWIS: I would object to that question if he
9 has not seen it.

10 MR. DUBUC: The report is in front of him.

11 Let the record reflect he spent five minutes looking
12 at that report.

13 MR. LEWIS: I disagree. It was a minute or two.

14 THE DEPONENT: He has Y access and G loads on
15 passenger compartments. He has total travel time. He used
16 1159 versus 1950. Air loading, G loading, flight deck
17 traveling distance -- this calculation would represent
18 something like a constant G deacceleration. Again, if you
19 are asking me do I agree with using constant G acceleration
20 with a problem of this type, I would have to disagree with
21 that.

22 He also has a crash-site type drawing -- same thing.

1 Do you want me to read through some of the state-
2 ment?

3 Q If this is the first time you have seen it, if
4 you can do that and tell me if there is anything in that that
5 you would disagree with, it would help me. If you need more
6 time to do that, we will do that. I am at your disposal on
7 that.

8 MR. LEWIS: Although you have a right to use your
9 time any way you want, Mr. Dubuc, it seems to me it would
10 be more productive to ask him for his views rather than asking
11 if he agreed or disagreed with anyone else.

12 MR. DUBUC: He told me about 20 minutes ago he told
13 me he did not have any opinions formulated.

14 MR. LEWIS: You didn't ask him.

15 BY MR. DUBUC:

16 Q Have you formulated some final opinions that you
17 were going to give at trial or did I misunderstand you?

18 MR. LEWIS: I thought he gave me a whole series of
19 opinions all through this deposition.

20 THE DEPONENT: The opinion I have developed would
21 be based on the calculations I would continue to make.

1 couldn't state definitely that that is an upper-lower bounds
2 until I make sure when I have had time to go through the
3 reports in detail and make sure of the access system they are
4 using.

5 Q You previously indicated that you agreed, assuming
6 your guess of 20 G's on the empennage is one figure that
7 with an airplane of this size that peak G's on, say, the
8 cockpit, the other end of the airplane would not necessarily
9 be the same. Is that true?

10 A At some point it might exceed that. If you took
11 an accelerometer on the tail and an accelerometer on the
12 nose, they are going to go through different timings for
13 reaching different peaks. They are not going to be level,
14 and you can't assume that they are level because you can't
15 perform that integration without an acceleration instrument.

16 Q In connection with what you have been asked to do
17 and what you are going to do, after you get a number, what-
18 ever that turns out to be after you have finished your
19 calculations with respect to the G-loading on the empennage,
20 is it in your plan or in the request made to you to attempt
21 to also interpolate from that maximum G loading on such things
22 as the flight deck or flight deck or troop compartment?

1 BY MR. DUBUC:

2 Q Which you have not finished making?

3 A The basic opinion is, first of all, constant deac-
4 celeration in this region is not justifiable; and that can
5 be looked at in several ways, if that is what you want to talk
6 about.

7 What I would like to do with some of this data that
8 we have read into the record is calculate some points on the
9 structure where I know it has been damaged by some additional
10 type -- fire or some other form. I can look at a type failure
11 and it is isolated enough from the rest of the happenings around
12 it that I can calculate the maximum upper bound for a G load.
13 It will not tell me the maximum.

14 It will tell me the maximum peak and the maximum
15 middle. I will look at these photographs and see if I can
16 find some additional structures and look at some other ones
17 so I can determine peak G loads.

18 Their calculations, as I said, do not take into
19 account some very specific things. One is the heel.

20 You are assuming a constant deacceleration. They
21 did not account for the acceleration.

22 The deacceleration force on the front of the airplane

1 varying in some fashion due to velocity.

2 Q I understand what you are saying as to concepts
3 but am I correct, you have not come up with any other numbers
4 at this point; is that correct? Are you saying some things
5 you would like to do and you have not done that yet; is that
6 correct?

7 MR. LEWIS: I object to the form of the question.

8 THE DEPONENT: Only very roughly and they have not
9 been documented. I am not sure of all the points I want to
10 do. One point is the tail.

11 Q As of this moment, in your opinion, what were the
12 G forces on the tail section empennage portion of this air-
13 plane?

14 A I would believe above 20 degrees.

15 Q Probably? Is that to a reasonable scientific
16 certainty?

17 A I would have to go through and check and make sure
18 I pulled the information out correctly and then I might have
19 some certainty.

20 Q When you say probably 20 degrees, that is a guess?

21 A That is using the numbers, going through the
22 calculator and making sure I have everything right but I

1 A No, we would have a number at a particular instant
2 in time. We can't say for sure what any G acceleration in any
3 particular place would be, because the airplane was not
4 instrumented to give us an acceleration time history landing

5 Q I understand.

6 A I have in front of me a document that says acceleration
7 for this airplane over this entire period -- Turnbow's
8 report says 166 G. He shows a number of 5. He is telling
9 me a maximum G peak anywhere along this airplane and it
10 does not matter if it is the troop compartment or tail, a
11 maximum of 5 G's.

12 Q If you can take this data --

13 A I can take this data a look through here. I have
14 a failure load and I can determine a G. If it is greater
15 than that, it would show there is no way you can use an
16 average G over this distance times the multiplication factor
17 to give it to you.

18 Q But you have not done that?

19 A No. It is just rough -- rough numbers until I
20 have had detailed time to make sure on my analysis.

21 Q You are not sure of your analysis at this point?

22 MR. LEWIS: I object to the form of the question.

1 THE DEPONENT: I am sure of the analysis. I would
2 want to further study the Lockheed reports. I might want to
3 look at points between the tail, the fuselage that didn't
4 break and also engine and pylons. There are many points on
5 the structure that you could look at and all of that design
6 information is on those reports.

7 Q In connection with your analysis, having viewed the
8 photographs and read what you reviewed, in your opinion, is
9 there any significance or interest on your part in analyzing
10 whatever forces were operative at the time and in connection
11 with the separation of the wings from this aircraft?

12 MR. LEWIS: I object to the form of that question.

13 THE DEPONENT: Just viewing the wings themselves,
14 it is a very complex structure and the sequence of events
15 would be beyond any, I guess -- it would take too many
16 assumptions, because you do not know the flying speed of the
17 aircraft at this time. You do not know how much lift is
18 being generated versus the deaccelerating load. You do not
19 know the angle of attack so any typical caluclations in this
20 sense would be almost like trying to calculate peak G's
21 along this route.

22 Q You don't think you could do it, for example, if

1 you had the wing loading at the point of detachment from the
2 fuselage, the stress information similar to the reports you
3 got on the empennage? You would not be able to do it from
4 the wing standpoint?

5 MR. LEWIS: What is it? How much force it would
6 take to rip the wings off?

7 MR. DUBUC: Yes.

8 THE DEPONENT: That is in the report. I don't
9 have to calculate that.

10 BY MR. DUBUC:

11 Q Would you use that figure?

12 A I did not say anything about looking at the wings.

13 Q At this point, your process is corrected with the
14 empennage?

15 MR. LEWIS: I object to the form of that question.

16 THE DEPONENT: Not totally.

17 BY MR. DUBUC:

18 Q Maybe I misunderstood your other answers about
19 the wing being too complex.

20 A The wing is buried down in the fuselage.

21 Q It is buried --

22 MR. LEWIS: I want to make sure I understand this.

1 Was your previous question referring to the wing
2 whether this witness --

3 MR. DUBUC: Read the question to Mr. Lewis, please,
4 Mr. Reporter.

5 MR. LEWIS: I want to finish my question first.
6 Whether he could calculate the maximum G's this airplane
7 sustained based on some maximum on the wing. Whatever it was,
8 is it your question?

9 MR. DUBUC: Do you want to hear the question?

10 MR. LEWIS: You want to answer my question?

11 MR. DUBUC: I want to hear the question.

12 MR. LEWIS: We really do have to wind this up in
13 the next few minutes.

14 MR. DUBUC: We wouldn't finish. We will preclude
15 his testimony for anything he has not finished.

16 I would like to find out about the wings if that
17 is relevant. If he is not going to use it, then we wouldn't
18 ask him for it.

19 Let's hear the question.

20 [The Reporter read the pending question.]

21 BY MR. DUBUC:

22 Q I will rephrase the question.

1 The question, Doctor Turner, is, in your process
2 of computing acceleration force operative on the C5A aircraft
3 and its components during the landing in Saigon in connection
4 with this accident, can you take the information as to the wing
5 as contained by your reference in the documents previously
6 discussed today, the Lockheed reports on loading and weights
7 and stress and make a similar calculation using computations
8 relevant to the forces operative on the separation of the
9 wing?

10
11 MR. LEWIS: In other words, how much force it takes
12 to break the wing as opposed to the maximum force on the air-
13 plane.

14 BY MR. DUBUC:

15 Q Not how much it takes -- how much occurred. I
16 gather that is what we are discussing here.

17 MR. LEWIS: When you say occurred, do you mean,
18 what was the maximum force on the airplane? I think he has
19 already testified to that.

20 MR. DUBUC: I think he understands the question.

21 THE DEPONENT: The reason I have not chosen to use
22 the wing data is because after the wing came off, it ended up

1 burning. In looking at the failure between, say, the wing
2 and the forward flight deck because of the subsequent damage
3 to the forward flight deck, I cannot clearly look at that
4 and see what I would call a good point of separation, because
5 the wing is designed to carry the load in a certain fashion.
6 The failure was a combination of deacceleration type loads
7 vertical. I do not have a clear, distinct structure to look
8 at. The tail, in other words, is designed to carry a load
9 in this direction, whether I load it in deacceleration or in
10 the lift. If I develop a bending across the section, this
11 section does not know how the tail is loaded, it sees a
12 loading. From the photographs, I can see a distinct break and
13 therefore I chose to use what I feel is an obvious break in
14 the structure.

15 BY MR. DUBUC:

16 Q As to the tail?

17 A That is correct.

18 Q As opposed to the wing?

19 A As opposed to the wing.

20 Q So, as to your computations, although the wing
21 situation may be relevant generally as to your computation of
22 G forces, it is not going to be relevant to your opinion; is

1 that correct?

2 MR. LEWIS: I object to the form. That is not what
3 the witness said. I think we are going to have to run off.

4 BY MR. DUBUC:

5 Q Can you answer the question?

6 A The wing is under a much more combined load.
7 It can be analyzed in the same fashion. I am sure, in these
8 analyses Lockheed has done deacceleration of the airplane
9 and you could go through the same steps because it has
10 loads that fell from the vertical direction and there is
11 stress analysis. Again, I do not choose to use it at this
12 time. I have not really delved into it because the wing is
13 damaged by the fire, the structure, the fittings, the forward
14 flight deck where the wing is -- that is damaged beyond just
15 looking at it and getting a feel for it. You could go into
16 it if you wished. If I did it, I would have to see similar
17 loadings. It seems to me from my view of the pattern on the
18 ground it was at the same time.

19 Q In your opinion the empennage was not damaged by
20 the fire, in your opinion?

21 A I am not a fire expert.

22 Q Well, it is not damaged to the extent you think it

1 is unusable in the same way as you would refer to the wing
2 problem; is that correct?

3 MR. LEWIS: I object to the form of that question.

4 That is now what he is saying.

5 THE DEPONENT: I just do not choose to use the
6 wing at this time. I saw the wing out here, which was
7 fairly well tangled.

8 MR. LEWIS: We just have to go if this man is going
9 to make his airplane. It is 4:15.

10 MR. DUBUC: We do not consider the deposition closed.

11 We will move for preclusion or request to take
12 additional deposition when his results are finalized. If
13 he is going to be using additional areas for alternative or
14 comparable computations, we would want to go into that as well.
15 If he is going to be provided any additional material to
16 review other than what he has told us he has reviewed now,
17 we would like to know about it.

18 Did you ask for additional material?

19 MR. LEWIS: You can make the statment but we have
20 just got to go.

21 THE DEPONENT: The only material I actually asked
22 for were those reports.

1 BY MR. DUBUC:

2 Q The Lockheed reports.

3 A You can probably look at the letter that was sent
4 and the request it was after, fusealge and empennage and
5 weights and stress data. They sent the entire airplane
6 information without me requesting it.

7 MR. LEWIS: I hear what you say with regard to
8 this witness' deposition, and my failure to respond to it is
9 not to be construed that we in any way agree with what you
10 say.

11 MR. DUBUC: Have a good trip back.

12 [Whereupon, the deposition was suspended at 4:13
13 o'clock p.m.]

14
15
16
17

CHARLIE D. TURNER, Jr.

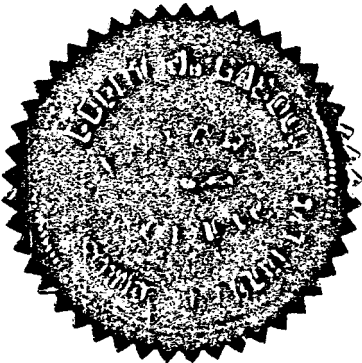
CERTIFICATE OF NOTARY PUBLIC/REPORTER


UNITED STATES OF AMERICA)
) ss.
DISTRICT OF COLUMBIA)

I, ALBERT J. GASDOR, a Notary Public in and for the District of Columbia, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness is a true and accurate transcription of the stenographic notes taken by me and thereafter reduced to written form by me and/or under my direction and supervision.

I further certify that I am neither counsel for, related to, nor employed by any of the parties to this action in which this deposition was taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this litigation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal this 31 day of October, 1981.





Albert J. Gasdor
Notary Public in and for
the District of Columbia

My Commission expires:
July 31, 1985