

UNITED STATES DISTRICT COURT  
FOR THE  
DISTRICT OF COLUMBIA

# STENOGRAPHIC TRANSCRIPT

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FRIENDS FOR ALL CHILDREN, INC., :  
as legal guardian and next friend :  
of the named 150 infant individuals, :  
et al, :  
:  
Plaintiffs, :  
:  
-vs- :  
:  
LOCKHEED AIRCRAFT CORPORATION, :  
:  
Defendant and :  
Third-Party Plaintiff, :  
:  
-vs- :  
:  
THE UNITED STATES OF AMERICA, :  
:  
Third-Party Defendant. :  
:  
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Civil Action No.  
76-0544

Arlington, Virginia

Thursday, October 8, 1981

Deposition of  
JAMES W. TURNBOW

**Mattingly Reporting, Inc.**  
COURT REPORTERS  
4339 Farm House Lane  
Fairfax, Va. 22032

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Deposition of JAMES W. TURNBOW, a witness herein,  
called for examination by counsel for the Plaintiffs in the  
above-entitled action, pursuant to notice, the witness being  
duly sworn by Claireen M. Holmes, a Notary Public in and  
for the Commonwealth of Virginia at Large, at the offices  
of Lewis, Wilson, Lewis & Jones, Ltd., 2054 North Fourteenth  
Street, Suite 300, Arlington, Virginia, commencing at

1 1:05 o'clock p.m., the proceedings being taken down by  
2 stenotype by Claireen M. Holmes and transcribed under her  
3 direction.

4 APPEARANCES:

5 On behalf of the Plaintiffs:

6 OREN R. LEWIS, JR., ESQUIRE  
7 ROBERT W. LEWIS, ESQUIRE  
8 Lewis, Wilson, Lewis & Jones, Ltd.  
9 2054 North Fourteenth Street  
Suite 300  
Arlington, Virginia 22216

10 On behalf of the Defendant:

11 CARROLL E. DUBUC, ESQUIRE  
12 Haight, Gardner, Poor & Havens  
13 Federal Bar Building  
1819 H Street, N.W.  
Washington, D.C. 20006

C O N T E N T S

<u>Deposition of</u>	<u>Examination by Counsel for</u>	<u>Plaintiffs</u>	<u>Defendant</u>
James W. Turnbow	4		

EXHIBITSFor Identification

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P R O C E E D I N G S

Whereupon,

JAMES W. TURNBOW,

a witness herein, was called for examination by counsel for the Plaintiffs, and, having been first duly sworn, was examined and testified as follows:

EXAMINATION BY COUNSEL FOR PLAINTIFFS

BY MR. OREN LEWIS:

Q Would you state your full name, please?

A James W. Turnbow.

MR. DUBUC: You should know, before you start, that in that description what he is going to testify to, he is not testifying on pressure differentials in the airplane. His field is the G force area. He is not going to be offered on the hypoxic decompression at this point.

MR. OREN LEWIS: Okay.

BY MR. OREN LEWIS:

Q Now, sir, I have a report that you gave the Defendant, Lockheed, which is Exhibit D1303. Was that prepared by you, sir?

A Yes, sir.

Q And I may have missed it, but I don't know that I know the date of it. What is the date of it, can you

1 tell me?

2 A It was very close to September the 8th. I may  
3 be one day, I guess, off.

4 Q Well, if I were under oath and I had to say when  
5 I completed it, what date would I put?

6 A September the 8th, 1981.

7 Q 1981. All right. When were you asked to prepare  
8 this report, sir?

9 A It would have been sometime after July the 27th --  
10 29th.

11 Q 1981?

12 A 1981.

13 Q Okay. And who were you first contacted by?

14 A In conjunction with this case?

15 Q Yes, sir.

16 A I believe that that would have been Mr. Piper.

17 Q And that was on or about the 27th of July?

18 A No. That would be a little earlier than that.

19 Q Can you tell me when that was?

20 A Probably June of '81.

21 Q May or June of 1981?

22 A May or June of 1981.

23 Q Now, have you ever worked for the United States

1 as a consultant, sir?

2 A Yes, sir, I have.

3 Q How many times?

4 A Well, I wouldn't be able to give you an exact  
5 number, I am sure, but I have done some work for the U.S.  
6 Army. I have been involved in at least one official  
7 meeting with the U.S. Air Force. Let's see. I have done  
8 some work for the F.A.A. in conjunction with one or two  
9 aircraft accidents.

10 Q Anything else?

11 A That is about it, I think.

12 Q Did you ever work for the Lockheed Aircraft  
13 Corporation or any of its subsidiaries?

14 A Not to my knowledge, prior to this time.

15 Q All right, sir. And you are consultant in this  
16 case to the Lockheed Aircraft Corporation?

17 A Yes, sir.

18 Q Your profession at this time, sir, is as a  
19 consultant, sir? An engineering consultant?

20 A That is correct.

21 Q And you have been doing that since 1972?

22 A Well, actually I have been doing that since  
23 about 1960, and there have been a few occasions prior to

1 1960 in which I have.

2 Q Well, Doctor, I wasn't suggesting that you didn't  
3 have experience prior to 1972.

4 A I understand.

5 Q It is just that I am having difficulty understand-  
6 ing your C.V. and it is no doubt to me, but it says  
7 consulting experience, and it seems to suggest that you  
8 worked at various places up to '69, and then in '72 you  
9 were consultant to Sikorsky, and then after '72, it says  
10 aviation and automotive accident investigation for various  
11 legal firms.

12 A Well, that would be correct as far as the legal  
13 firms.

14 Q So that is why I framed the question as I did,  
15 sir.

16 A However, I would point out to you that I  
17 furnished you, I believe, a copy of my vita in conjunction  
18 with this report, and that will give you a little better  
19 understanding of what all I have done.

20 Q Well, sir, on the second page of your report,  
21 which is Exhibit 1303, it says -- that is a document with  
22 your picture, is that your personal brief history, sir?

23 MR. DUBUC: On the second page?



1 THE WITNESS: On the second page?

2 MR. OREN LEWIS: Yes. The one with your  
3 picture.

4 MR. DUBUC: That is at the end, I guess.

5 THE WITNESS: It should be in the last page.

6 BY MR. OREN LEWIS:

7 Q Well, in the copy that I have, it happens to be  
8 the second page. I don't know how it became that way.

9 MR. DUBUC: The exhibit that is marked has it  
10 at the end, so --

11 MR. OREN LEWIS: Well, whichever is the one with  
12 your picture on it, is that your personal brief history?

13 THE WITNESS: Yes, sir.

14 BY MR. OREN LEWIS:

15 Q And you are not speaking of anything else?

16 A No, sir.

17 Q All right. What are you doing in -- let's say in  
18 1980. Were you doing essentially consulting work?

19 A That is correct.

20 Q For various clients?

21 A That's correct.

22 Q And has that been the case since 1972?

23 A Yes, and also prior to that time.

1 Q I appreciate you did consulting prior to that  
2 time, but it seems that you were working in a more  
3 concentrated -- I don't know that this is true, but it  
4 seems to suggest that you were more concentrated prior to  
5 '72, the way you put it out. In other words, for example,  
6 you say in 1954 to 1959, Bellcon's Research Center  
7 (phonetic), University of Texas. Now, was that, in effect,  
8 a full-time position, sir?

9 A It was full time at the University of Texas,  
10 yes, sir. That is correct.

11 Q All right. And then after that, from '60 to  
12 '69, it says consultant for the Flight Safety Foundation?

13 A Yes, sir.

14 Q Was that a full-time position there?

15 A No, sir, it was not.

16 Q All right. So then that was a -- but you did  
17 act as a consultant for the Flight Safety Foundation  
18 during that period, but you did other consulting work; is  
19 that correct, sir?

20 A Yes, sir. That would be correct, although 99.9  
21 percent of it, in a period from 1960 to '69 would have  
22 been with the Flight Safety Foundation.

23 Q Well, that is what I thought. It seems, the way

1 that this is structured, that you were primarily occupied  
2 with the companies that were described here?

3 A Have I cleared it up for you?

4 Q Yes, some.

5 Now, then it says in 1972 -- 1972, were you  
6 with Sikorsky Aircraft at that time?

7 A I did some work for Sikorsky, yes, sir. That is  
8 correct. As a consultant.

9 Q Now, was that full time, sir?

10 A No, sir, it was not.

11 Q That was as you are now?

12 A That is correct.

13 Q But among the clients that you had, was Sikorsky?

14 A Sikorsky would have been one of my clients,  
15 that is correct.

16 Q So in effect, then, from January of 1972 on, your  
17 experience as it is now, that you are a general consultant  
18 for various clients?

19 A That would be correct.

20 Q Yes, sir. Now, it reads aviation and automotive  
21 accident investigation for various legal firms, and that is  
22 where we see 1972 on. Which law firms?

23 A I have worked for Mr. Franklin Houser in

1 San Antonio; I have worked for Mr. Gerald Sterns in  
2 San Francisco; I have worked for Mr. Cathcart, McGania  
3 and Cathcart (phonetic) in Los Angeles; and a number of  
4 others.

5 Q Now, since 1972, are your clients essentially  
6 law firms?

7 A Essentially, that would be correct. However,  
8 I have done some work for Peter's Helicopter and some work  
9 for Bell Helicopter and Sikorsky, as indicated here.

10 Q All right, sir.

11 A Let's see. I can't think of any other category  
12 that you wouldn't include under the title "law firms".

13 Q And is it essentially in connection with  
14 litigation, since 1972?

15 A Essentially, that would be correct, sir. Yes,  
16 more than 50 percent.

17 Q Well, what percentage is not connected with  
18 litigation since 1972?

19 A A very few percent..

20 Q So, it is well over 95 percent?

21 A I would say probably so, yes.

22 Q All right. On the basis of fees received, is  
23 the bulk of it for plaintiffs or for defendants?

1           A     I have worked for both. I would say the bulk  
2 would probably be plaintiff.

3           Q     That is in dollars?

4           A     In dollars?

5           Q     Yes, sir.

6           A     Yes, sir.

7           Q     I'm talking about in revenues.

8           A     Did you ask me a question?

9           Q     Yes, sir. I'm trying to find out, and I  
10 probably wasn't too clear as to what percentage of your  
11 consulting work, from a dollar standpoint, was received  
12 from plaintiffs and from defendants.

13          A     Well, again, it would be more than 50 percent,  
14 I believe, for plaintiffs.

15          Q     Do you know?

16          A     Probably -- I don't have the faintest idea. Maybe  
17 70-30, something like that. Seventy percent for the  
18 plaintiffs, 30 percent for manufacturer, whatever.

19          Q     All right. But since 1972, your engineering work  
20 has been almost exclusively for litigation; is that a fair  
21 statement?

22          A     That would be correct, yes, sir.

23          Q     These involve matters that are either in court

1 or contemplated in going to court; is that correct?

2 A That is correct. Yes, sir.

3 Q How many times have you testified, sir?

4 A I haven't the faintest idea.

5 Q Can you give me some estimates?

6 A By testifying, you mean in court?

7 Q Well, I am going to break it down any way that  
8 is clear. How many times in court since 1972?

9 A Well, I'd say -- this is a very crude estimate,  
10 maybe 15 times, something like that.

11 Q Okay. How many times have you given your  
12 deposition?

13 A Well, at least that many times, I would say.

14 Q All right. So you have been in court 15 times;  
15 you have given your deposition --

16 A Fifteen or 20 times, probably.

17 Q -- 15 times?

18 A Maybe more than that.

19 Q I would like your best judgment.

20 MR. DUBUC: He is giving it to you.

21 THE WITNESS: I am giving you, you know, the  
22 best I can, and that is very crude, I want you to understand  
23 that.

1 BY MR. OREN LEWIS:

2 Q I understand that, sir. And you have records  
3 on this, do you not?

4 A Not really, no.

5 Q You don't have records on how many cases or  
6 matters that you have handled?

7 MR. DUBUC: Asked and answered.

8 THE WITNESS: No, sir. I haven't maintained  
9 such records.

10 BY MR. OREN LEWIS:

11 Q Well, you don't maintain --

12 MR. DUBUC: Asked and answered. He has told you.

13 BY MR. OREN LEWIS:

14 Q What kind of records do you maintain,  
15 Dr. Turnbow?

16 A Well, I have some of the depositions of which  
17 I have given, for example.

18 Q Do you keep those?

19 A I keep those.

20 Q All of them?

21 A No.

22 Q Why not?

23 A Well, some of them I never wound up with to begin

1 with.

2 Q All right. Do you have records of the people  
3 that you worked for, the law firms and such, in the cases  
4 that they asked you to handle?

5 A Some of them I do have, yes. Some of them I  
6 don't.

7 Q What is your -- and it is no doubt on here, sir,  
8 and I -- your bachelor's degree in engineering, sir, what  
9 area is that in?

10 A It is mechanical engineering.

11 Q And that is machines or devices that move, in a  
12 sense?

13 A That is correct, among other things.

14 Q And then your master's degree is -- what is that  
15 in, sir?

16 A Engineering mechanics.

17 Q A refinement of the same subject, sir?

18 A Yes, but -- that is a good way to put it, I  
19 guess. Sure.

20 Q If it isn't -- what is your thesis in?

21 A The response of a beam to an impact load. I  
22 presume you meant thesis and not dissertation.

23 Q Well, I understood that a thesis was the master's



1 degree.

2 A That is correct.

3 Q And the dissertation was the doctoral.

4 A That is the reason I asked the question.

5 Q Okay. Response of a beam to a load?

6 A Impact load.

7 Q Impact load, I am sorry.

8 Now, what was your Ph.D. in, sir? What branch?

9 A It was also in engineering mechanics.

10 Q And what was your dissertation?

11 A Properties of materials. Specifically, aluminum,  
12 copper at high rates of strain.

13 Q Now, in your analysis of the crash here, you  
14 have on a page that is unnumbered, under the heading of  
15 analysis of G levels associated with the C5A accident  
16 near Saigon, April 4, 1975, and it says referenced used:  
17 and you have 13 items; is that correct, sir?

18 A Yes, sir.

19 Q Does that describe all of the information that  
20 you had at the time that you did the report?

21 A Well, I am not sure that it does. In all  
22 probability, it does not.

23 Q Would you tell me what else that you had that --

1           A     I have two base board boxes I would say probably  
2 somewhere between 30 and 40 pounds each, both full.

3           Q     Well, that doesn't help me much, Doctor. I'm  
4 going to want to know precisely what it is that you  
5 used and relied on in reaching your conclusions.

6           A     Well, precisely, that is what I used.

7           Q     Precisely --

8           A     But most specifically, the 13 items which I  
9 have listed here.

10          Q     Would you describe the contents of the boxes?

11          A     Yes, sir.

12          Q     In addition to these items.

13          A     I can't tell you.

14          Q     You don't have any idea?

15          A     I don't have any idea.

16          Q     Why didn't you describe it here?

17          A     Because these were the things that I used in the  
18 report.

19          Q     Well, what I am trying to find out, sir, and if  
20 I am not clear, I want you to be sure and tell me. What  
21 I am trying to find out is the data that you used, the  
22 information that you used, the facts or assumptions that  
23 you made in arriving at the conclusions that you arrived at.

1 So, that is where I would like to start, and I gather  
2 that you have done the same thing in effect by setting  
3 out these 13 items?

4 A Yes, sir.

5 Q And a casual reader would assume that these are  
6 the things that you would rely on. This is the factual  
7 basis for your report, and if it is not, I want to find  
8 out what other factual basis, if any, there is. And so  
9 when you talk about two boxes of materials, that does not  
10 help me at all.

11 A I understand that, but I can't tell you what is  
12 in those two boxes with great detail today.

13 Q Can you tell me with any detail?

14 A If I would, I could -- if I could, I would. Let  
15 me see if I can think of anything that I have not listed  
16 here.

17 I don't think of anything at the moment that I  
18 have that I would have used certain extensively, other  
19 than what I have listed in these 13 items. Most of these  
20 boxes involve depositions and trial testimony --

21 Q I understand that.

22 A -- from previous trials and that is listed in  
23 item number six.

1 Q Okay. Now, can you tell me, sir, where was  
2 Regina Aune located in the troop compartment?

3 A Yes, sir. I think so. She was seated on the  
4 floor in the aisle about midway, lengthwise in the aisle,  
5 in much an Indian style. I believe there is one term  
6 that is used. Maybe not by Regina Aune, but one of the  
7 people describing how they were sitting.

8 Q Where was Barbara Adams located?

9 A She was between rows two and three on the right-  
10 hand side of the aircraft in the front of the troop  
11 section.

12 Q She was between the seats?

13 A She was between the seats, that is correct.

14 Q All right. Who was holding Barbara Adams' hand?

15 A That would have been her daughter.

16 Q What is her name?

17 A It is a short name, about four letters.

18 Q Linda?

19 A Linda, uh-huh.

20 Q All right.

21 A Five letters, I guess.

22 Q Where was Thelma Thompson?

23 A I don't know about Thelma Thompson at this point.

1 Q Where was Peter Daughty, D-A-U-G-H-T-Y?

2 A I don't know about Daughty.

3 Q You don't have any idea where he was?

4 A I just don't recall at the moment.

5 Q Where was William Parker?

6 A Parker would have been in the aisle, probably  
7 to the rear of a midpoint in the aisle.

8 Q Where was Linda Adams located?

9 A I have told you where Linda Adams was located.

10 Q She was on the same side of the main aisle as  
11 her mother and next to her; is that correct?

12 A That is correct. Both her mother and she were  
13 between rows two and three, Linda says, on the right-hand  
14 side.

15 Q All right. Now, there is a main aisle that runs  
16 from forward to aft in this troop compartment; is that  
17 correct?

18 A That is what I understand.

19 Q And how many seats on each side?

20 A Three. Well, that is not quite correct. There  
21 is two sets of seats up in the front, in which there are  
22 only two seats on the left-hand side of the airplane,  
23 across from the latrine.

1 Q All right, sir. Now, other than that, is there  
2 any other main aisle in the forward and aft?

3 A Not to my knowledge, other than the fact that  
4 in the extreme rear of the aircraft. That would not  
5 perhaps completely describe the arrangement.

6 Q All right. But there is no side aisle on either  
7 side of the aircraft; is that correct, going forward and  
8 aft?

9 A As far as I know, there is not.

10 Q So the seats, then, are, for the main, arranged  
11 on either side of the aisle in rows of three?

12 A That is correct.

13 Q And then, of course, there would be an aisle  
14 or space, in any event, between the rows of seats?

15 A Yes, sir.

16 Q That's correct. So, when you say, for example,  
17 that Barbara Adams, she was located in the space between  
18 rows of seats two and rows of seats three; is that correct?

19 A That is what she says, at any rate.

20 Q Well, I am just trying to understand where you  
21 undertook to place her in your analysis of this.

22 A I didn't undertake to place her in any place. I  
23 simply take her statement --

1 Q All right. Well, I want to know, did you assume  
2 that she was in that location? That Barbara Adams was  
3 in that location?

4 A I have assumed that, I suppose.

5 Q You see, I need to know what factual assumptions  
6 you made. If you didn't do that, I want to know where you  
7 placed her?

8 A I am happy with that.

9 Q All right. And you assumed that her daughter,  
10 Linda Adams, was located next to her on that same side of  
11 the main aisle in the rows -- between rows two and three;  
12 is that correct?

13 A That is correct.

14 Q All right. Now, where was Christie Lievermann  
15 located?

16 A She was between probably the -- well, the last  
17 rown and the next to the last row, or in about that  
18 location. It might have been between two and three or  
19 one and two, near the back of the airplane, and I believe  
20 on the left-hand side. Although, at the moment, I can't  
21 say that I recall whether it was left or right.

22 Q Now, you have called out row numbers. How are  
23 you counting?

1           A     In the first case, rows two and three were  
2 measured from the front of the plane.

3           Q     All right.

4           A     But are you talking about the Adams girls?

5           Q     I am speaking of Barbara Adams.

6           A     Uh-huh. In the second case, I used the same  
7 terminology that Lievermann used. She said rows two and  
8 three, I think, but she is referring to the back of the  
9 aircraft, at least as far as I can ascertain.

10          Q     All right. But let's just talk about one  
11 nomenclature, just so that we can understand, you know,  
12 when somebody does their thesis, can understand what we  
13 are talking about. And it doesn't make any difference  
14 to me whether you choose to count from the front or the  
15 back, sir, but whatever you think is reasonable. Do you  
16 want to start from the front?

17          A     I am happy with that, if you are.

18          Q     All right. I am, too.

19                So then the Adams women were located between  
20 rows two and three, counting from the front; is that  
21 correct, of the troop compartment?

22          A     That is what they say, yes.

23          Q     All right. And that is what you have assumed?



1 A Yes.

2 Q And on which side of the aisle, right or left?

3 A On the right-hand side.

4 Q On the right side, all right. Now, and then  
5 what row would Christie Lievermann be in, then?

6 A Do we have a layout of the --

7 Q Do you know the number?

8 A I don't know how many rows there are at the  
9 moment, so we will have to do some counting for you here.

10 MR. OREN LEWIS: Would you let the record show  
11 that counsel and the witness are consulting.

12 MR. DUBUC: Yes. We are counting the rows.

13 MR. OREN LEWIS: Well, I don't know whether  
14 that requires a conference off the record.

15 MR. DUBUC: Okay. Let the record reflect that  
16 we have counted the rows. Do you want me to count them  
17 on the record? We can do that, too.

18 MR. OREN LEWIS: Well, let's do this.

19 Dr. Turnbow, I have a --

20 MR. DUBUC: Just so you know what we are  
21 counting from, we are looking Exhibit D1210.

22 MR. OREN LEWIS: Well, I happen to have one of  
23 those, too.

1 MR. DUBUC: Okay.

2 BY MR. OREN LEWIS:

3 Q Would you do this for me, sir, take that diagram  
4 and write -- put bow or front -- is bow a better word or  
5 front for an airplane?

6 A Forward.

7 Q Forward? All right. Put forward for the forward  
8 portion of the airplane, would you, so that we would be  
9 able to see? Then, would you, along whichever side makes  
10 sense, let's say the closest to you, start with one, two,  
11 three, four, five, and then let's go down so that we can --

12 A You want me to number them?

13 Q Yes, sir. Just put numbers on those rows. May I  
14 come over there and just see how you have numbered that,  
15 sir?

16 So there are 14 rows; is that correct, sir?

17 A That is what this diagram would indicate.

18 Q All right. Now, would you then locate Christie  
19 Lievermann where you assume she was for purposes of your  
20 analysis on this diagram?

21 A Well, I will give you two possible locations.

22 Q Okay.

23 A All right. My difficulty here is that I don't

1 know what she means by two or three rows from the rear.  
2 This could be a couple of places.

3 Q All right. Well, just tell me where you placed  
4 her for purposes of your analysis?

5 A Okay. I have given you two locations.

6 Q All right. Would you describe them? Between  
7 what rows?

8 A Well, they would actually come between rows 10  
9 and 11, or 12 and 13.

10 Q All right. And on the left side of the aisle,  
11 which would, in this case, be the row closest to the one  
12 who is looking at this diagram; is that correct?

13 A That would be correct. Yes, sir.

14 Q All right, sir. Or in other words, it would be  
15 port -- on the port side?

16 A That is correct.

17 Q All right. Would you put CL in those rows?

18 MR. DUBUC: He has already written Christie  
19 Lievermann.

20 BY MR. OREN LEWIS:

21 Q All right. That is fine.

22 Between 10 and 11, or 11 and 12, and we understand  
23 for the record that it was one of those locations.

1 A (Nodding head, indicating in the affirmative.)

2 Q Would you put Barbara Adams in her location,  
3 since we have these numbered now? Just put BA, if you will.

4 MR. DUBUC: BA, okay.

5 BY MR. OREN LEWIS:

6 Q And then you have put an LA for Linda Adams, all  
7 right.

8 A Right.

9 Q Now, would you put Harriet Goffinet Neill on this  
10 diagram?

11 A Yes. She would have been directly across the  
12 aisle.

13 Q Across which aisle, sir?

14 MR. DUBUC: You have established that there is  
15 only one aisle.

16 MR. OREN LEWIS: Oh, he means the main aisle.  
17 All right.

18 And between what rows of seats, sir?

19 THE WITNESS: Well, that would be between four  
20 and five. However, I would point out to you, you know,  
21 that while they have said rows two and three, that rows two  
22 and three measured from the end of the latrine or measured  
23 from the bulk end, and I don't know the answer to that.

1 BY MR. OREN LEWIS:

2 Q All right.

3 A But in view of the fact that Barbara Adams was  
4 on the right-hand side -- Linda Adams was on the right-hand  
5 side, if she was looking into rows, then she was looking  
6 at the end of the latrine.

7 Q All right.

8 A So that is the reason I come up with them located  
9 between rows four and five.

10 Q All right, sir. Now, then --

11 A But see, now, we are --

12 Q And Harriet Neill then is between four and five  
13 on the left-hand or port side of the airplane; is that  
14 correct, sir?

15 A That is correct. I will write Neill --

16 Q Would you mark that HN or whatever you think is  
17 fair for that?

18 MR. DUBUC: Neill. He came up with Neill. That  
19 is close.

20 MR. OREN LEWIS: Neill, all right.

21 BY MR. OREN LEWIS:

22 Q Now, would you locate Marcia Tate?

23 A At the moment, I don't recall where she is

1 located.

2 Q You don't know where she was; is that correct?

3 A At the moment, I don't recall.

4 Q All right. And would you locate Regina Aune  
5 for me?

6 A Aune?

7 Q Yes.

8 A I can do so only approximately.

9 Q All right.

10 A Okay.

11 Q And where did you put her, sir? May I see  
12 the document?

13 A Well, I have her between rows eight and nine.  
14 That could be between nine and ten or ten and eleven.

15 Q All right. But she was in the main aisle; is  
16 that correct?

17 A That is my understanding, yes, sir.

18 MR. DUBUC: You said or between 10 or 11? Why  
19 don't you make that to indicate --

20 THE WITNESS: Okay.

21 BY MR. OREN LEWIS:

22 Q Now, where was Gregory Gmerek, spelled  
23 G-M-E-R-E-K?

1           A     My recollection is that Gmerek would have been  
2 somewhere in the vicinity of Aune.

3           Q     Well, where was he from your review of the data?  
4 Where was he located?

5           A     I have told you everything I can, at the moment.

6           Q     You don't know whether he was between the seats  
7 or in the aisle or any place, do you?

8           A     I believe that he was in the main aisle.

9           Q     All right.

10          A     That is the impression that I have gotten.

11          Q     Well, I want you to give us as accurately as you  
12 can. I want you to be as precise as you can. If you  
13 don't know --

14          A     This is as precise as I can, at the moment.  
15 Although, I will tell you that I am not absolutely positive.

16          Q     All right. Who else was in the --

17          A     I am not sure that they know exactly where they  
18 were, as a matter of fact.

19          Q     So Aune could be mistaken as to where she was?

20          A     She seems to be pretty clear about her location  
21 and the fact that she was sitting on the floor in about the  
22 middle of the airplane.

23          Q     Well, when you said "they", I presume you meant

1 all of them. Or do you just feel that this particular  
2 airman doesn't know where he was?

3 A That is what I have referred to. Yes, sir.

4 Q Well, you said "they". Who else did you have in  
5 mind when you said "they"? They means more than one to me.

6 A Well, for example, Parker.

7 Q Where was he? Do you know where he was?

8 A To the best of my knowledge, he would have been  
9 at some point to the rear of the aircraft, relative to Aune.

10 Q But you don't know whether he was in the aisle  
11 or between the seats, do you?

12 A I am reasonably certain that he was in the aisle.

13 Q How do you know?

14 A Because he went down the aisle.

15 Q He could have been thrown into the aisle.

16 A Say again?

17 Q He could have been thrown into the aisle, he  
18 could have walked into the aisle. I want to know how you  
19 know, if you know, sir?

20 A He had gotten up in the process of attempting  
21 to move to a slide, which had begun to expand as a result  
22 of the first impact, with the intent, I believe, of  
23 deflating that slide.



1 Q Who reported that? Which witness stated that?

2 A I don't know which witness stated that.

3 Q Where was Susan Dirge located?

4 A I don't recall at the moment.

5 Q Can you tell me where Dr. Merritt Stark was  
6 located? You put him on the diagram.

7 A I can only give you an approximation of his  
8 location.

9 Q Well, where was that?

10 A It would be on the right-hand side of the  
11 aircraft, between rows of seats. He was not in the aisle.  
12 He was between rows of seats, and he would have been near  
13 the rear of the aircraft, in the front of the aircraft.

14 Q All right. And have you located Harriet Neill?  
15 I guess you have.

16 MR. DUBUC: Yes.

17 BY MR. OREN LEWIS:

18 Q May I see your diagram now? So, we have located  
19 everybody that you know their location of, Doctor? Can  
20 you place anybody else on this diagram?

21 A There were two of the sergeants. They were very  
22 near Aune, but at the moment, I don't think I can tell you  
23 what those sergeants' names were.

1 Q How about Thelma Thompson? Where was she?

2 A I don't know where Thelma Thompson was.

3 Q She was between the seats, wasn't she?

4 A I don't know.

5 Q Well, who else -- what other adults were in the  
6 troop compartment that you know of, in addition to those  
7 we have named? You mentioned -- what are the sergeants'  
8 names?

9 A There were two sergeants that we haven't talked  
10 about.

11 Q Do you know what their names were?

12 A At the moment, I don't recall them.

13 Q And you don't know where they were?

14 A They were very near Aune.

15 Q But you don't know whether they were between the  
16 seats or in the aisle; is that correct?

17 A They were in the aisle, is my understanding.

18 Q Are you sure about that?

19 A Well, that is what --

20 Q I am not debating it with you, Doctor. I am just  
21 asking you if you are sure about that.

22 A Well, I guess I would have to say that I am as  
23 sure about that as I am about the other locations that were

1 given. That is what is stated in either the court's  
2 testimony or their statements.

3 Q Now, what injuries did Linda Adams have?

4 A She had knee injuries and those being the  
5 major injuries that she had.

6 Q What did --

7 A Maybe cut, bruise, that sort of thing.

8 Q What injuries did Barbara Adams sustain?

9 A I believe that she was one of the fatalities in  
10 the aircraft.

11 Q What injury did Harriet Neill suffer?

12 A I believe she had a broken collar bone and  
13 that would have been her primary injury.

14 Q What would have been her primary injury?

15 A The collar bone.

16 Q What injuries did Christie Lievermann suffer?

17 A Bruise. That is about it.

18 Q And the injuries to Susan Dirge?

19 A To who?

20 Q Susan Dirge.

21 A I can't give you any information on that at the  
22 moment.

23 Q And what injuries did you say Linda Adams had?

1 A Knee injury.

2 Q What kind of kr

3 A The cartilage :

4 Q Which knee?

5 A Probably both.

6 Knees, I believe.

7 Q Is that the e....

8 A Say again?

9 Q Did she have any other injuries?

10 A If there were other injuries, they apparently  
11 were minor.

12 Q Did she sustain any cuts?

13 A Possibly.

14 Q Well, did she or didn't she?

15 A If you want to know, we can get out her statement.

16 Q I know, sir. I'm just trying to understand what  
17 it is that you used in coming to your conclusions, and I  
18 am just trying to get that.

19 MR. DUBUC: He is telling you.

20 MR. OREN LEWIS: Okay.

21 MR. DUBUC: He can get out the statement, if you  
22 want to look at it.

1 BY MR. OREN LEWIS:

2 Q Now, what injuries did Peter Daughty,  
3 D-A-U-G-H-T-Y, have?

4 A None -- say again? Say the name, I'm sorry.

5 Q Peter Daughty, D-A-U-G-H-T-Y.

6 A No. I was thinking of Boutwell, and he is one  
7 of the chaps whose name I had forgotten. Daughty, I don't  
8 recall.

9 Q You say Boutwell had no injuries at all?

10 A I don't think so.

11 Q All right. How about Peter Daughty,  
12 D-A-U-G-H-T-Y.

13 A I don't recall about Daughty. It must have been  
14 very minor.

15 Q And William Parker?

16 A I believe he was the military fatality in the  
17 troop compartment.

18 Q What did he die of?

19 A I don't have an answer.

20 Q Do you have any idea of the injuries he sustained?

21 A He was observed to have a head injury.

22 Q Any others?

23 A Well, let's see. Gmerek. If you will permit me

1 to ask a question here --

2 Q Certainly. I am speaking of William Parker, now.

3 A Say again?

4 Q My question is with respect to William Parker.

5 MR. DUBUC: Well, you said any others, and he --

6 MR. OREN LEWIS: Well, I am talking about any  
7 other injuries to William Parker.

8 MR. DUBUC: Oh.

9 MR. OREN LEWIS: I am sorry if I wasn't clear,  
10 Doctor.

11 THE WITNESS: I don't have any further  
12 information on Parker.

13 BY MR. OREN LEWIS:

14 Q What fractures did he sustain.

15 MR. DUBUC: Who?

16 BY MR. OREN LEWIS:

17 Q William Parker.

18 A What? Say again?

19 Q What fractures, if any, did William Parker have?

20 A I have no knowledge of his fractures.

21 Q Can you describe what bones were broken, if any?

22 A I cannot.

23 Q Can you describe in any detail, with any precision,

1 the type of injuries that William Parker sustained?

2 A. He was observed to have a head wound, I believe.

3 Q. How long post-accident did he die?

4 A. I don't have the answer to that.

5 Q. Did you read his medical reports?

6 A. I did not.

7 Q. Did you see any data about his injuries?

8 A. I did not.

9 Q. Can you describe what injuries Thelma Thompson  
10 sustained?

11 A. I have no information on Thelma Thompson.

12 Q. So, you don't know? You couldn't describe that to  
13 any degree; is that correct?

14 A. That is correct.

15 Q. And you can't describe with any precision the  
16 injuries to Barbara Adams; is that right?

17 A. Statements were made by -- I believe it would  
18 have been Harriet Neill, but I could be mistaken on that  
19 point. But, one of the nurses, that she appeared to have  
20 a broken back.

21 Q. All right. When you say a broken back, the  
22 back has a number of bones and things attached to it. Are  
23 you speaking of a broken spinal column --

1 A Spinal column.

2 Q -- or fractured bones? What are you speaking of?

3 A Spinal column.

4 Q Did you make any attempt to try to analyze the  
5 type of wounds to the body that Barbara Adams sustained?

6 A Well, she reports that she had the knee injuries.  
7 However, she helped evacuate the aircraft, take the  
8 children out of the aircraft, and she was ambulatory.

9 Q Now, sir --

10 MR. DUBUC: Was your question with regard to  
11 Barbara or Linda?

12 MR. OREN LEWIS: I am content.

13 THE WITNESS: Oh, I am sorry. I am thinking of  
14 Linda Adams.

15 MR. OREN LEWIS: Note for the record that  
16 Mr. Dubuc reminded the witness.

17 MR. DUBUC: Well, note for the record that  
18 Dr. Turnbow has some hearing problems and I know you have  
19 dropped your voice once in a while, Mr. Lewis. So, if you  
20 would keep your voice up, as you ask him to, maybe he will  
21 catch all of your --

22 MR. OREN LEWIS: I will. And if you don't under-  
23 stand me or if I am not loud enough, Doctor, you tell me. I



1 usually haven't had the problem of being heard, but if  
2 you do have a problem --

3 THE WITNESS: Well, I am sure I heard you, but  
4 for some reason I was thinking of Linda Adams rather than  
5 Barbara Adams. And, I think I made the same mistake the  
6 first time you asked me about one of the Adams girls.

7 BY MR. OREN LEWIS:

8 Q I am interested in as much accuracy as you can  
9 give me, Dr. Turnbow. I mean, it is important to me.

10 A I understand that.

11 Q Now, what --

12 MR. DUBUC: I am sure you are not trying to  
13 have him say that Barbara Adams was ambulatory and working  
14 on the airplane. I know you are not intending to do that.  
15 So, I thought I would point it out, his having already  
16 testified that she was one of the fatalities.

17 BY MR. OREN LEWIS:

18 Q Would you tell me, sir, what wounds the body of  
19 Barbara Adams sustained?

20 A I have already done that.

21 Q Would you tell me?

22 A Again?

23 Q Yes.

1           A.     I believe that it was -- Harriet Neill was not  
2 her name at the time, is my understanding, at any rate,  
3 observed that she was in the front of the aircraft and was  
4 in a position that would suggest to Harriet Neill that she  
5 would have had a broken spinal column.

6           Q.     Did you look at any documents such as medical  
7 reports or body identification reports or autopsies which  
8 described with any precision the location of wounds, bruises,  
9 and fractures on the body of Barbara Adams?

10          A.     No, I did not.

11          Q.     Did you look at any type of reports by either a  
12 physician or a body identification person or any other  
13 person that had the responsibility to locate and point out  
14 wounds and accident marks on the persons of anybody in the  
15 troop compartment?

16          A.     No, sir, I have not.

17          Q.     Now, have you reviewed -- and I want to make sure  
18 that I am not confusing you. Have you reviewed any  
19 medical reports or medical data on any of the children in  
20 the troop compartment?

21          A.     I have not.

22          Q.     Now, for the purpose of your report, you have  
23 assumed that all of the children were in seats; is that

1 correct?

2 A That is correct.

3 Q And that they -- there were two in a seat; is  
4 that correct?

5 A No, that is not correct.

6 Q What have you assumed?

7 A That there were one or two to a seat.

8 Q All right. Well, let's find that out, then.  
9 They were all in seats, is that the assumption that you  
10 have made? Is that the basis that you have been working  
11 on?

12 A That is correct. Yes, sir.

13 Q All right. Now, how many were one to a seat?

14 A I don't know.

15 Q Do you know how many were two to a seat?

16 A I don't know.

17 Q Do you know how many there were in the troop  
18 compartment?

19 A One hundred and forty-three.

20 Q How many died in the troop compartment? I am  
21 speaking of children.

22 A Maybe 144.

23 Well, certainly one died.

1 Q Is there any report that said more than one died?

2 A There was some indication that there could have  
3 been two.

4 Q The collateral report said two died, didn't it?

5 A I don't know whether I got that statement from  
6 the collateral report or not, but -- so, I don't remember  
7 whether the answer to your question is yes or no.

8 Q All right. I see the first item that you reviewed,  
9 under references used, was U.S.A. Collateral Report, Volumes  
10 One, Two, and Three.

11 A Yes, sir.

12 Q So, you had the collateral material?

13 A I had that material, yes, sir.

14 Q All right. Now, for purposes of this report,  
15 how many children did you assume died in their seat?

16 A One or two.

17 Q One or two. And did you ask for any information  
18 about injuries to the children that were in the seats of  
19 the troop compartment?

20 A No, sir. I have not done that.

21 Q Did you ask for the medical reports and/or the  
22 death certificates or whatever documents may exist as to the  
23 adults in the troop compartment?

1 A. No, sir, I have not.

2 Q And you didn't look at the medical reports of  
3 the surviving children or ask for any of this information?

4 A. No, sir.

5 Q Now, do you have a wreckage distribution diagram  
6 as part of your report, sir?

7 A. Yes, sir, I believe so.

8 Q Before we do that, let me ask the court reporter  
9 to mark this as Turnbow's Exhibit Number One. This is  
10 Defendant's Exhibit 1210, as drawn on by the witness.

11 (The document, Diagram of  
12 Troop Compartment, was marked  
13 as Turnbow Deposition Exhibit  
14 No. 1 for identification.)

15 BY MR. OREN LEWIS:

16 Q Now, do you have a wreckage distribution diagram,  
17 sir?

18 A. I do have, yes, sir.

19 Q And now if you will refer to the wreckage  
20 distribution diagram that is attached to your report, sir.

21 A. Yes, sir.

22 Q I want to ask you some questions about this.  
23 Firstly, what photographs did you see at the time you wrote

1 your report?

2 A Well, I had seen photographs of the initial  
3 touchdown location.

4 Q Is that an aerial photograph or is it a ground  
5 level photograph?

6 A Well, if it was an aerial photograph, it was  
7 taken from only a few feet from the ground. Well,  
8 correction. I believe that there were also some aerial  
9 photographs. A fairly large number of photographs.

10 Q Well, you mention in item two of your references,  
11 photographs of the aircraft prior to and following the  
12 accident.

13 A Yes, sir.

14 Q Do you see that? Did they give you copies and  
15 did you keep copies of these photographs?

16 A I have copies of some of the photographs, not all  
17 of them, that I looked at prior to writing this report.

18 Q In the two boxes?

19 A That is correct. Yes, sir.

20 Q Firstly, how many photographs did you see?

21 A Well, I can't give you an exact number, but  
22 probably -- I just don't remember.

23 Q Can you give me an order of numbers? Is it more

1 than 100? Less than 100?

2 A Maybe 50.

3 Q Fifty. And I understand that that is not exact,  
4 but approximately 50; is that correct, sir?

5 A That might be 25 and that might be 125.

6 Q Well, that is a pretty wide range.

7 A Yes, sir. I understand that is, but that is the  
8 best I can do for you right now.

9 Q But in any event, you have them in the boxes?

10 A No, sir. I don't have all of those. I would guess  
11 offhand that I might have 20, 25 photographs.

12 MR. OREN LEWIS: Mr. Dubuc, can you tell me  
13 what photographs he was furnished with?

14 MR. DUBUC: Yes. He was furnished with photographs  
15 used in the first trial, both color and black and white,  
16 that were marked as exhibits, and some that weren't marked  
17 as exhibits, but were in the series of, I think, series  
18 three and ten and two, if I am not mistaken.

19 MR. OREN LEWIS: But no photographs other than  
20 those that were marked, whether they were exhibits or --

21 MR. DUBUC: Well, some were not marked as exhibits.

22 MR. OREN LEWIS: I understand that, but all but  
23 the exhibits three, ten, and two. There were no others?

1 MR. DUBUC: I think that is right. Three, ten,  
2 and two series. That was before he wrote his report.

3 MR. OREN LEWIS: Pardon?

4 MR. DUBUC: That was before he wrote his report.

5 MR. OREN LEWIS: I understand that.

6 MR. DUBUC: He has seen a bunch of pictures  
7 yesterday -- last night.

8 MR. OREN LEWIS: You understand, Mr. Dubuc, why  
9 I am interested --

10 MR. DUBUC: Oh, yes.

11 MR. OREN LEWIS: -- in trying to see what he has  
12 seen, and I don't really want to get into any difficulty  
13 over that. I would just like to make as clear a record  
14 as we can of what he saw before he wrote his report.

15 MR. DUBUC: He saw those series that we had  
16 at those previous trials that were available.

17 MR. OREN LEWIS: Well, when did --

18 MR. DUBUC: I suspect he has probably seen some --  
19 I am not sure. He may have seen some of the AAR photographs.

20 MR. OREN LEWIS: What do you mean by "AAR"?

21 MR. DUBUC: The sanitized portion was released in  
22 1976, and was marked in the liabilities stage. I don't  
23 remember if he saw any of those part photographs or not.



1 They were marked in our exhibits -- depositions, but I  
2 guess they weren't used at the trial, because they weren't  
3 talking about those issues.

4 BY MR. OREN LEWIS:

5 Q Well, sir, when was the first occasion that you  
6 saw photographs of the crash, site and the parts? I am  
7 speaking of the wreckage parts as opposed to the mechanical.

8 A Well, I believe the first photographs I would  
9 have seen would have been in late July of this year. That  
10 is not correct. I have -- I have seen photographs and  
11 slides, and I believe also some motion pictures of this  
12 accident over the last couple of years, much prior to the  
13 time that I was contacted --

14 Q All right.

15 A -- by Mr. Dubuc here in conjunction with this  
16 case.

17 Q What were the motion pictures of? The accident  
18 scene or the aerial pictures?

19 A The photographs that I am thinking about --

20 Q I am speaking of motion pictures.

21 A I am not absolutely certain that these were  
22 motion pictures, but they were aerial scenes predominantly,  
23 that's correct.

1 Q And slides, you mentioned slides?

2 A Slides, and these would have been aerial scenes.

3 Q And ground level shots?

4 A There may have even been some ground level shots.

5 Q All right. And who showed those to you?

6 A These, I believe, would have been shown by Air  
7 Force personnel.

8 Q All right. And what was the occasion?

9 A Well, I am director of a short course, at least  
10 previously I was director of a short course at Arizona  
11 State University, in which we trained Air Force, Army, and  
12 other personnel in accident investigation, and these  
13 photographs were shown in conjunction with the short  
14 course.

15 Q I understand, sir. Now, just so that I can  
16 identify the short course a little better, were you the  
17 teacher in that course, sir?

18 A Yes. There were other teachers that I had.

19 Q But you were one of the principal teachers?

20 A That is correct. Yes, sir.

21 Q All right. Who brought the films to the --

22 A This would have had to have been U.S. Air Force  
23 people, I believe.

1 Q I understand. And that would have been some of  
2 the -- but were they students or teachers, sir?

3 A Say again?

4 Q Would the --

5 A It would have been a student.

6 Q A student?

7 A I believe. However, we called upon our students  
8 to make presentations --

9 Q I understand.

10 A -- about current events.

11 Q I understand. But were there any Air Force  
12 teachers, sir?

13 A Were there any Air Force teachers?

14 Q Yes, sir.

15 A In this class?

16 Q Yes, sir.

17 A There could have been, yes.

18 Q I am just trying to pin down who it was.

19 A Some of the teachers varied from time to time.

20 These are elective --

21 Q I understand. And when was this course given?

22 A Well, it has been given since about 1958, I guess.

23 Q I understand.

1 A Three or four times a year.

2 Q And can you give us an approximation as to when  
3 you first saw these motion pictures and still pictures  
4 involving the crash?

5 A I first saw them, I think it was very shortly  
6 following the accident.

7 Q Would it have been in -- we are speaking of '75  
8 or '76, sir?

9 A Yes, sir. That would probably be about the  
10 right order of magnitude in any event.

11 Q And did you say that this was at Arizona State  
12 University, sir?

13 A Yes, sir.

14 Q And who were the students in the class? In other  
15 words, was this for Air Force people?

16 A Anybody interested in aviation safety, but Air  
17 Force, Marines, Army, Department of Transportation --

18 Q I understand.

19 A -- Canadian Department of Transportation, lawyers,  
20 manufacturers.

21 Q I understand, sir. And approximately what was  
22 the duration of the course? Was it a semester course?

23 A No. It is a two-week, seven hours a day.

1 Q So it was an intensive kind of a program?

2 A That is correct, sir.

3 Q With a number of lectures, including yourself?

4 A That is correct.

5 Q Who would cover various phases of aircraft  
6 accident investigation among other things; is that correct,  
7 sir?

8 A Yes, sir.

9 Q And these motion and still pictures were shown as  
10 one of the presentations in that course in which you were  
11 present?

12 A Yes, sir.

13 Q And by an Air Force officer, either a student  
14 or one of the teachers?

15 A Yes, sir. That is correct. And that has been  
16 done on more than one occasion.

17 Q Can you give me some idea of how many times that  
18 would be?

19 A I would say two or three times.

20 Q And this was -- the slides were color slides of  
21 the wreckage and that sort of thing?

22 A Yes, sir. I am sure there were color slides. I  
23 remember color, I think. Yes.

1 Q Let me show you some of the color slides,  
2 Doctor, and ask you if these are the type of pictures that --

3 MR. ROBERT LEWIS: Prints.

4 MR. OREN LEWIS: These are prints, of course,  
5 but if you could just look at those. Take your time.

6 THE WITNESS: Well, they are the sorts of things  
7 that I am referring to. Some of the ones that impressed  
8 me at the time, and this I remember quite specifically,  
9 were the aerial shots. It showed the river and the  
10 distribution of the wreckage and where the aircraft  
11 touched down.

12 BY MR. OREN LEWIS:

13 Q I understand.

14 A And that sort of thing.

15 Q But there were ground level shots of the wreckage  
16 as well?

17 A I am not sure about that particular detail. It seems  
18 to me that I remember ground level shots, as well as the  
19 aerial shots, But I could be mistaken on that point.

20 Q All right.

21 A After you've looked at several hundreds of these  
22 photographs in the case --

23 Q I understand.

1 A It is kind of hard to tell when you saw what.

2 Q Now, would there be any way to locate that  
3 material, sir?

4 A I don't know of any way to do that. No, sir.

5 Q The Air Force people took it back with them?

6 A Yes, sir.

7 Q It didn't remain part of the curriculum?

8 A No, sir.

9 Q Was there a program of some kind that one could  
10 look back and identify who it was that produced that?

11 A No, sir. It would be possible to. There is  
12 more than one of these impromptu things, that people were  
13 discussing this particular accident, and somebody had the  
14 slides, so we put them on.

15 Q I understand. Now, calling your attention to the  
16 wreckage diagram --

17 MR. DUBUC: That is Exhibit D9, by the way.

18 MR. OREN LEWIS: Thank you. Exhibit D-9?

19 D as in "dog"? Nine?

20 MR. DUBUC: Yes.

21 BY MR. OREN LEWIS:

22 Q What damage -- strike that.

23 Describe, if you will, the condition of the ground

1 in the area of the first impact. I mean, from that point  
2 to the river. You see the diagram here, sir?

3 A All right. Yes, sir, I am clear on what you  
4 are asking me, but I am not sure whether you are asking me  
5 about the nature of the terrain or --

6 Q Everything.

7 A What it looked like, the airplane touchdown?

8 Q Everything that you are relying on as a fact on  
9 which you base your conclusions, Doctor.

10 A All right. It is level terrain or essentially  
11 level terrain. In fact, I guess probably rice footage.  
12 There are some relatively small ditches, boons, that sort  
13 of thing. Various edges of some of the fields. There  
14 were some palm trees, which were shown on the diagram and  
15 there were, I think, four of these palms. The diagram  
16 shows three. It seems to me I recall that the aircraft,  
17 right-hand wing, passed through four of them. There are  
18 photographs which show the marks made by the landing gear  
19 on the aircraft as it touched down in this area.

20 Q Would you put those on this diagram, where this  
21 airplane first hit the ground?

22 A It would be where it says initial touchdown. It  
23 is already laid out there.



1 Q And how long are the gouge marks?

2 A I will have to estimate that for you. I don't  
3 know that anyone has given a specific measurement.

4 Q Well, I want whatever you have concluded, that is  
5 the basis of your analysis of these facts, Doctor.

6 A Well, I have not made any conclusions one way or  
7 the other as far as my knowledge is concerned of the length  
8 of those marks.

9 Q Well, how deep are they?

10 A Again, I would have to estimate that.

11 Q Well, give me your best estimate.

12 A Well, I would say that while the tires were on  
13 the ground, the depth -- if you want specific numbers here --  
14 now, you are just trying to find out what I know about this?

15 Q Yes, I am.

16 A Or do you want to know what the answers are?

17 Q Well, I want to find out what you know about it.

18 A Well, you know, there are an awful lot of thing  
19 about this accident -- Mr. Lewis, is it?

20 Q Yes, sir.

21 A That pretty obviously that I don't know and  
22 an awful lot of things about this accident that nobody knows  
23 anything about, and there are an awful lot of things about

1 this accident that nobody is ever going to know anything  
2 about. One can spend a lifetime in looking at details of  
3 this accident and I will say, "never have scratched the  
4 surface."

5 You are asking me about things that are in-  
6 significant as far as I am concerned.

7 Q I understand that, Doctor. You will have to  
8 forgive me --

9 A I will try to find out what you want to know, and  
10 I will do my best to tell you, sir.

11 Q I understand, sir, but there were a number of  
12 very small children that were hurt in this crash, and it  
13 is important that we get what the situation is, sir. And,  
14 I believe that it is a very reasonable thing for me to try  
15 to find out the depth of your knowledge.

16 Now, I am sorry if you feel that is unreasonable,  
17 because I really don't intend it to be.

18 A No, I don't feel that it is unreasonable at all.  
19 That is the reason that I am asking you here, because if  
20 you are interested in some particular detail, I don't want  
21 to give you a wrong number.

22 Q Sir, you see, this is your field, the engineering,  
23 and not mine. Now, I am a trial lawyer and I am just

1 interested in your knowledge of the facts, and I would like  
2 you to tell me, if you can, what your estimate of the  
3 length of the gouge marks at the point that the airplane  
4 first came to the ground, and I am speaking of that side  
5 of the river. I don't know whether that would be -- we  
6 can speak of left bank and right bank or any other reasonable  
7 way that you think would be a reasonable way to describe it.  
8 But since north is in the upper part of the diagram, I  
9 guess --

10 A East bank and west bank.

11 Q -- this would be east bank and west bank.

12 A That is very good.

13 Q Well, let's speak of east bank and west bank. On  
14 the east bank, could you tell me how long the gouge marks  
15 are in the ground, to your best estimate?

16 A Could you let me take a look at your photographs  
17 that show those gouge marks?

18 Q If you can't do it without looking at the  
19 photographs, I will accept that. But, I am anxious to see  
20 what you know.

21 MR. DUBUC: He indicated --

22 THE WITNESS: I can give you some crude  
23 approximations, but you will have to understand that they will

1 be crude.

2 BY MR. OREN LEWIS:

3 Q You never undertook to try to analyze that; is  
4 that correct?

5 A That is correct, because I don't feel that it is  
6 significant.

7 Q I understand that, but if you would just give me  
8 your best estimate, how long they are.

9 A If you look at the photographs, you are going to  
10 discover that the left-hand gear, and this would be the  
11 rear main gear on the aircraft, touched down first. There  
12 will be wheel marks for a distance of some 10 or 15 feet.  
13 And about the point in which those wheel marks begin to  
14 play out, you will discover that there will be wheel marks  
15 due to the right-hand rear gear.

16 Q The first was to the left; is that correct?

17 A That is correct.

18 Q Ten to 15 feet of field marks to the left gear,  
19 and then the right gear touches down; is that right?

20 A If we understand now that by 15, that is a very  
21 crude approximation.

22 Q All right.

23 A On the right-hand side, I would say that the

1 length of the wheel marks are probably less long. Again,  
2 this would be clearly shown if you look at the photographs,  
3 but the length of the marks would be somewhere, again, in  
4 the vicinity of 10 to 15 feet.

5 Q On the right side?

6 A On the right side, that is correct.

7 Q All right. When you say right side, you are  
8 speaking of the right side or starboard side of the aircraft?

9 A That is correct. Then returning to the left-hand  
10 side, both of the rear main gears broke off in this first  
11 touchdown, and the break occurred at a point -- well, it  
12 occurred in the moveable part of the oleo strut and just  
13 above, once referred to as a bogey. And if you look at  
14 the photograph, you will find that as soon as the load was  
15 removed from that left-hand moveable part of the oleo, it  
16 extended and started making a mark in the soil, and the  
17 depth of the mark is -- might be a foot deep.

18 Q Not deeper than that?

19 A Maybe two foot deep. Probably about a foot deep  
20 would be my guess, looking at the --

21 Q Your best estimate.

22 A About a foot deep, and the length of this mark  
23 will probably be of the order of maybe 20, 30, it could be

1 40 feet. That order of magnitude.

2 Q Twenty to 40 feet?

3 A Something like that, yes.

4 Q And this is the mark made by the left landing  
5 gear after the wheels broke off?

6 A At least a portion of the left landing gear, that  
7 is correct. In the inside of that, there will be a parallel  
8 mark, and that will be roughly the same length, should be  
9 about the same length. And that mark is most probably  
10 made by the rear inboard wheel door, landing gear wheel  
11 door. On the right-hand side of the airplane, there will  
12 be a couple of -- I say a couple, now that could be four,  
13 six, or two. Photographs will clearly show what the  
14 situation is there, but these are a couple of indentations  
15 in the soil and these are also probably made by the broken  
16 right-hand gear.

17 Okay. I think I have answered your question.

18 Q All right. Let me make sure that I understand.  
19 How many landing gear -- how many main landing gear does  
20 this aircraft have?

21 A Four.

22 Q Four. And how are they arranged on the aircraft?

23 A They are in tandem pairs.

1 Q So there are two pairs -- excuse me, there is  
2 one pair of two on each side?

3 A That is correct. Yes, sir.

4 Q And are they side by side or one behind each  
5 other?

6 A They are tandem. One in front of the other.

7 Q All right. The reason I am asking you this,  
8 sir, is somebody -- you clearly understand it, but somebody  
9 without the background may not understand precisely what  
10 that means, so that is why I am asking that question that  
11 way.

12 A Okay.

13 Q So then the -- how many of the tandem gears on the  
14 left side broke off?

15 A One.

16 Q So then there was one set of wheels left, right?

17 A That is correct.

18 Q And one set of -- excuse me. And one shaft with  
19 no wheel?

20 A That is correct.

21 Q And which broke off, the front or the back on the  
22 left side?

23 A The back.

1 Q The back. So, there were wheels on the front  
2 and no wheels on the back shaft?

3 A That is correct.

4 Q That is with the left side. Now, how about  
5 the right side, sir?

6 A The same situation.

7 Q So the front gear you say were left on?

8 A The two front main gears were left on.

9 Q On both those sides?

10 A On both sides.

11 Q And they were just shafts?

12 A No. No. The complete gear with all -- let's see.  
13 There would be a two, three, four, five, six, a total of  
14 12 wheels.

15 Q No, I am speaking of in the part of the landing  
16 gear where the wheels broke off, there was just a shaft;  
17 is that correct? There weren't wheels at that part?

18 A That is correct.

19 Q So --

20 A Apparently I didn't understand your question.

21 Q I understand that. I just want to be clear. Now,  
22 the wheels were located under the wings or were they in the --  
23 I am speaking of the main landing gear, sir, or were they in



1 the fuselage?

2 A They were in the fuselage. They attach  
3 structurally to the fuselage structure.

4 Q All right, sir. Now, how long was the mark on  
5 the -- I believe you said on the left side, and I may be  
6 mistaken. There was a 10 or 15 foot wheel mark, and then  
7 there was a shaft mark, if that is a fair way to put it,  
8 which was 20 to 40 feet?

9 A That is on the left-hand side.

10 Q That is correct. Now, what is the shaft mark  
11 on the right-hand side? You may have said, I just want to  
12 make sure.

13 A There were just two or three nicks on the ground.

14 Q Just nicks on the ground. So there is no long  
15 shaft mark; is that correct?

16 A That is true.

17 Q And they arrange from two to six; is that  
18 correct, sir?

19 A That is the way I recall it, yes.

20 Q Over what distance?

21 A Well, it would be about the same distance as on  
22 the left-hand side.

23 Q Twenty to 40 feet?

1 A Yeah, somewhere in that range.

2 Q Okay. Now, did the front wheels make marks?

3 A No, sir. I find no evidence of that.

4 Q Did any other portion of the airplane touch the  
5 ground other than the wheels that you have described and/or  
6 the shaft?

7 A The landing gear.

8 Q Yes, sir.

9 A The left-hand landing gear door.

10 Q The left-hand landing gear door. Anything else?

11 A Well, are you talking about in that particular  
12 location?

13 Q Any place on the east bank.

14 A Yes, I believe that there were some other pieces  
15 of the aircraft which were shed on the west bank, at least  
16 there is a possibility that that could be true.

17 Q All right. What parts were shed on the east bank,  
18 sir?

19 A Well, they probably would be parts associated with  
20 the landing gear doors or skin in that general vicinity of  
21 the fuselage.

22 Q Well, I would like you to tell me with as much  
23 precision as you can what parts were found on the east bank.

1 A I have no knowledge of what specific parts were  
2 found.

3 Q Do you know how many wheels were found on the  
4 east bank?

5 A No, I don't know how many wheels were found. I  
6 have seen quite a few of them, let's see, I think about  
7 at least eight or ten, I would say, just looking at the  
8 photographs.

9 Q Well, there are four main landing gear, I believe,  
10 we have already established.

11 A Yes, sir.

12 Q Now, how many wheels does each one have?

13 A Each landing gear has six wheels.

14 Q So, there were 24 wheels in total in the main  
15 landing gear; is that correct, sir?

16 A Yes, sir.

17 Q Plus whatever is in the nose?

18 A Yes.

19 Q And how many are there in the nose?

20 A There are four in the nose.

21 Q All right, sir. Now, so you don't know how many  
22 wheels were found?

23 A I don't know how many, but I have already given

1 you a wrong answer, and I am counting here in my mind  
2 wheels that I have seen in the photographs, and I have seen  
3 more than ten.

4 Q So, you have seen --

5 A I wouldn't be surprised if all 24 of the --  
6 correction. All 12 -- well, if I see more than 10, that  
7 would be 12 in the rear gears, and I have seen four and  
8 four and some more. So, I have seen -- well, at least 10,  
9 I guess. That is about as close as I can be. But, I  
10 started to say, I wouldn't be surprised if all 12 wheels  
11 were on the east side of the river.

12 Q Well, did you undertake to find that out? That  
13 is one of the things --

14 A I didn't. I know that all 12 broke off on the  
15 east side of the river, and that is as far as I need to go.

16 Q How do you know that?

17 A Say again?

18 Q How do you know that?

19 A Well, I don't really care where the wheels went.

20 Q I know. How do you know that they all broke off  
21 on the east side?

22 A Because they took the bogeys off.

23 Q And what is a bogey?

1           A     The bogey is the thing that the wheel is attached  
2 to, and so when the bogey goes, the wheels go with it.

3           Q     And were all the bogeys found for the rear wheels  
4 on the east bank?

5           A     Well, the left-hand bogey probably broke into  
6 several parts, at least I think that it broke into several  
7 parts. So, I can't tell you that it couldn't have been a  
8 part on the west side of the river.

9           Q     I just want to know if you know or not.

10          A     Well, haven't I told you?

11          Q     No.

12          A     I haven't told you?

13          Q     Was there any --

14          A     Then the answer is I don't know, I guess.

15          Q     Well, the court reporter isn't going to be able  
16 to guess, Mr. Turnbow, and I don't want to, either. She  
17 writes down as accurately as she can, which is quite  
18 accurately, everything that you or I say. And so, deductions  
19 are, I guess, for later, but I just want to try to get the  
20 data that you have and the analysis that you made.

21          A     Very good.

22          Q     Now, were there any other marks on the east bank  
23 other than those you have described from the aircraft?

1 A. Yes, sir.

2 Q. What were they?

3 A. Well, there were marks made by various wheels  
4 as they went forward from the initial touchdown site.

5 Q. Okay. And where are they located?

6 A. Out in front of this shaded area, it appears --  
7 well, perhaps within the shaded area that appears in the  
8 wreckage diagram.

9 MR. DUBUC: Exhibit D9.

10 THE WITNESS: Exhibit D9?

11 MR. DUBUC: Yes.

12 THE WITNESS: I think I have answered your  
13 question.

14 BY MR. OREN LEWIS:

15 Q. Well, I am trying to find as clearly as I can,  
16 sir, what marks in the ground were on the east bank. Now,  
17 you have described -- I don't know whether you have described  
18 them all, but I want all of them.

19 A. No, I haven't described them all.

20 Q. Well, I may not have been clear, but I do want  
21 them all.

22 A. All right. There were also two marks that were  
23 made by the -- by the air flow into the two left-hand

1 engines of the aircraft, and then there is a -- there is  
2 an area that extends generally within this shaded area  
3 in Exhibit D9, and perhaps extended a little bit further  
4 than that, in which these wheels are continuing to roll or  
5 to move along the surface. There is probably also some  
6 air blast from the aircraft that has disturbed the natural  
7 straw and dust, and that sort of thing, which disappears.

8 Q What was the state of the field? Would you say  
9 it was a rice field? That was on the east bank?

10 A Well, I am presuming that it would be a rice  
11 field.

12 Q Was rice growing in the field at the time?

13 A Basically, I don't think so. No.

14 Q What was the condition of the ground?

15 A I believe it would have been dry or nearly dry  
16 as compared to what you would expect to find in a currently  
17 growing green rice field.

18 Q It was like a field in the United States?

19 A It would be like a wheat field in the United  
20 States in the wintertime.

21 Q Okay. Now, on the left bank -- excuse me, on the  
22 west bank, what is the dike made of?

23 A Say again? On the west bank?

1 Q Yes, sir. What was the dike constructed of?

2 A I believe it to be constructed of soil.

3 Q Was it compacted?

4 A I can't answer that -- well, let me ask you  
5 this. What do you mean by "compacted"?

6 Q Well, I'd rather just ask you to tell me --

7 MR. DUBUC: Well, he is using your word. That is  
8 a pretty valid question.

9 MR. OREN LEWIS: I understand that, but --

10 MR. DUBUC: I should have asked you that three  
11 days ago.

12 MR. OREN LEWIS: I know you think this is amusing,  
13 Mr. Dubuc, but I don't really think that it is.

14 MR. DUBUC: No, I don't think it is amusing. I  
15 think it is a good question.

16 BY MR. OREN LEWIS:

17 Q Well, let me ask you this, sir. Soil comes in  
18 varying states of compaction, does it not, depending upon  
19 where it is, what has been done to it?

20 A Yes, sir, I would agree with that.

21 Q Now, that may not be an engineering term, and I  
22 am only a lawyer, and if there is another word that makes  
23 more sense, I will be glad to use it. I am just trying to



1 understand what you understood the construction of the dike  
2 to be like.

3 MR. DUBUC: Can we go off the record?

4 MR. OREN LEWIS: Sure.

5 (Discussion off the record.)

6 (Brief recess.)

7 BY MR. OREN LEWIS:

8 Q Sir, what was the state of the soil in the dike  
9 on the west bank of the Saigon River?

10 A Well, I can give you my best guesstimate as  
11 to what it would have been.

12 Q Well, did you make any -- did you make any attempt  
13 to come to any conclusion on what it was like? In other  
14 words, did you --

15 A Well, I think the answer is yes, I have.

16 Q All right. What is that?

17 A At least as it affects this accident.

18 Q That is what I mean. Would you tell me what  
19 you did?

20 A Well, I have talked with Mr. John Edwards and I  
21 have looked at the photographs of the dike, and I believe it  
22 to be just an ordinary dirt dike. You asked me if it was  
23 compacted, and I am extremely doubtful that it was done with

1 sheet roller, that sort of thing. I have no scientific  
2 reason for giving you that answer, I guess, but it would  
3 be kind of doubtful that that was done. It undoubtedly  
4 has been compacted by people walking up and down the dike,  
5 because when dikes are built, and people walk on them, --

6 Q Well, I just want to know --

7 MR. DUBUC: Well, wait a minute.

8 MR. OREN LEWIS: I'm sorry. Did you finish?

9 THE WITNESS: Just an ordinary dirt dike along  
10 a canal.

11 BY MR. OREN LEWIS:

12 Q Well, I am trying to get you -- if you feel that  
13 it has any type of strength, I'd like you to tell me what  
14 you think it has and if you made any attempt, did you make  
15 any inquiry about the quality of the soil? What type of  
16 soil it was or any of that kind of stuff? Did you make  
17 any assumptions?

18 A I assumed that it is soil that, you know, would  
19 grow crops and rice or --

20 Q Well, soil varies widely and its quality, does  
21 it not, as far as its capacity to be compacted and how hard  
22 it gets when it is compacted?

23 A Well, since there is a ditch adjacent to the field,

1 I would presume that the soil has been pulled out of that  
2 ditch and piled up as a dike, as contrasted as, say, going  
3 out here with a truck and hauling quarrel or calechi --  
4 or what do you people use in this country? Oyster shell  
5 or whatever. In other words, it was dirt that was a  
6 characteristic of this field area that we're talking about.

7 Q Well, I just want to know, did you -- so, you  
8 have made no assumptions as to --

9 MR. DUBUC: He has told you what he did. He just  
10 gave you several assumptions from pictures.

11 MR. OREN LEWIS: Well, I don't believe that I  
12 ever suggested that it was quarrel or oyster shell or  
13 calechi.

14 MR. DUBUC: No. No. He says it is not that,  
15 he says it is dirt. He just said that.

16 BY MR. OREN LEWIS:

17 Q Well, can you tell me, sir, do different types  
18 of soil have different qualities as far as their capacity  
19 to be compacted and their resistance to impact when  
20 compacted?

21 A Yes, sir.

22 Q Did you make any attempt to get any understanding  
23 of what those qualities might be in the case of this

1 particular dike?

2 A Not beyond what I have told you.

3 Q All right. What did Edward tell you?

4 A He indicated that it was just a dirt dike.

5 Q He didn't tell you what kind of dirt, how hard it  
6 was, or anything like that?

7 A No.

8 Q Do you know how old it is?

9 A No, I don't.

10 Q All right, sir. Now, where did the airplane  
11 first hit the ground, or any part of it, on the west bank?

12 A You said any part of it, didn't you?

13 Q Yes, sir.

14 A Well, I believe that some part of the main gear  
15 on the airplane may well have conducted -- compacted this  
16 dike, the top of the dike. I say the top of the dike,  
17 change that to read the dike.

18 Q When you say some part of the main gear, which  
19 part of the main gear?

20 A Well, it would be the wheels of the main gear,  
21 because those are the things that extend down the fenders,  
22 and the fenders forward in that particular aircraft.

23 Q So, we are talking about the front pair of landing

1 gear, the ones that you say still have wheels?

2 A Yes, sir. That is correct. I will also tell you  
3 that there is some possibility that the nose gear also  
4 contacted this dike.

5 Q All right, sir. And how do you see that, sir?

6 A How do I see that?

7 Q Yes. Well, how would one conclude that, or  
8 what evidence is there?

9 A Well, I don't know whether -- I haven't come to  
10 a final conclusion on that.

11 Q I understand.

12 A And in part because of these additional photo-  
13 graphs that have shown up.

14 Q Well, there is some evidence, though, that the  
15 front landing gear struck the dike; is that not correct,  
16 sir, from the marks on the dike?

17 A From the marks on the dike?

18 Q Yes.

19 A The front landing gear contacted the dike?

20 Q Yes.

21 A You said crossed it. There is no doubt in my  
22 mind that it went across it.

23 Q No. I am speaking of struck the dike. I mean the

1 front landing gear.

2 A Okay. I think we better start over on this one,  
3 Mr. Lewis.

4 Q All right. I understood you to say --

5 MR. DUBUC: He is having trouble with front landing  
6 gear, I think. Are you talking about front mains or nose  
7 gear?

8 MR. OPEN LEWIS: I guess I am not being  
9 precise and I apologize to you.

10 The front, you have told me, that the front main  
11 landing gear you felt struck the dike, and I believe you  
12 told me, and I may be mistaken, that there is some  
13 possibility that the forward landing gear --

14 MR. DUBUC: Nose gear.

15 THE WITNESS: Nose gear.

16 BY MR. OPEN LEWIS:

17 Q Nose gear, if you prefer, struck the dike; is  
18 that correct?

19 A Yes, sir. That is correct.

20 Q All right. And is that because of marks on the  
21 dike, sir?

22 A In part, yes. That is correct.

23 Q Well, what else suggests that the nose gear struck

1 the dike? What other evidence in addition to the marks on  
2 the dike suggests that the nose gear struck the dike?

3 A. Well, at the moment, I really can't think of  
4 any other evidence.

5 Q The only reason I ask the question, sir, is  
6 because you said "in part" and I --

7 A. I understand, but what other evidence do I have  
8 that the nose gear might or might not have struck the dike  
9 other than --

10 Q I thought you said the most recent photographs  
11 that you saw.

12 A. Well, that is correct. These recent photographs  
13 show the dike to a little bit better detail than we have  
14 ever seen them before.

15 Q Have you ever seen the movie?

16 A. I have seen the movie, yes, today for the first  
17 time, but --

18 Q Well --

19 A. Standby. The movie that I think you are referring  
20 to I have seen today for the first time.

21 Q Well, I am speaking of the one that I most  
22 recently obtained a copy of, and there were, for your  
23 information, two of them. One of them is a shorter one.

1 MR. DUEUC: That is the one he saw.

2 BY MR. OPEN LEWIS:

3 Q The shorter one is one showing apparently an  
4 attempt to fly over the crash scene directly; it is the  
5 smaller one. Then there is a larger one, which has a number  
6 of other scenes, apparently including that one scene in it.

7 A Well --

8 Q What did you see?

9 A Let me clear up one point, if I may.

10 Q Yes, sir.

11 A I told you previously that I think that I could  
12 have seen some movies of this accident site.

13 Q Yes, sir.

14 A And it is possible that the movie that I saw may  
15 have been one of these movies taken from a helicopter in  
16 which they flew the flight path.

17 Q And so they looked the same?

18 A Well, I just don't remember that much detail  
19 about --

20 Q I understand.

21 A -- what I looked at previously. So, I can't  
22 tell you whether it looked the same or not.

23 Q Well, it is the same sort of movie; is that



1 correct, sir?

2 A Yes. The sort of thing that I remember is yes,  
3 it would have been the same kind of movie.

4 Q Okay. So, it was from the movies and the most  
5 recent pictures that you saw which were the ones that you  
6 saw either last night or this morning; is that correct,  
7 sir?

8 A That is correct. This morning.

9 Q That suggest evidence that the nose gear may  
10 have struck the dike; is that correct?

11 A Well, it really doesnt suggest evidence that the  
12 nose gear struck the dike. It appears to be some  
13 disturbance in the top six inches of the dike, I will  
14 say, that would suggest that maybe something struck the  
15 dike.

16 Q All right, sir.

17 A And in view of the fact that this wreckage  
18 diagram, they bring the impact -- when I say they bring  
19 the impact area, let me see what it says. It says debris  
20 area. That is all it says. Debris area right up to the  
21 dike, and that would suggest to me that maybe somebody  
22 thought that the dike was involved.

23 Q All right. What was the terrain on the west bank?

1 Was it like a wheat field in the winter?

2 A No, sir. It would have been more like a rice  
3 field with water in the field, and that might not be true  
4 of all areas of that field over there. See, this airplane  
5 went something like a third of a mile or better, but  
6 generally speaking, at the time of the accident, I believe  
7 there would have been a great deal of water in that field.

8 Q All right. All the way up to the dike?

9 A Yes, sir.

10 Q Including all that shaded area? That is what's  
11 called the debris area; is that correct?

12 A Yes, sir, generally --

13 MR. DUBUC: Are we referring to Exhibit D9 now?

14 MR. OREN LEWIS: Yes, sir. And I am speaking of  
15 the west bank now.

16 So the terrain, for all practical purposes, was  
17 the same through the debris areas; is that your understand-  
18 ing?

19 THE WITNESS: More or less. There was different  
20 amounts of vegetation in some fields than in others.

21 BY MR. OREN LEWIS:

22 Q Was there rice under cultivation?

23 A I am not sure about that. I am not an expert on

1 rice farming.

2 Q Well, was there any kind of a crop that looked  
3 like grain growing in a field?

4 A Well, I have seen some of the photographs, and  
5 it would suggest to me that yes, there was something growing  
6 there, but I am not sure. I am not sure when those  
7 photographs were taken.

8 Q Well, you used the expression rice field  
9 earlier. I was just curious --

10 A Well, it wasn't corn or maize or cotton, at least --

11 Q Well, were they rice fields or not, sir, in your  
12 judgment?

13 A Say again?

14 Q Did you conclude that those were rice fields or  
15 not?

16 A I considered that they were rice fields. Sure.

17 Q All right, sir. Now, I would like you to  
18 describe your understanding of the -- is gouge mark a fair  
19 way to put what the type of mark that the wreckage makes  
20 when it travels across the ground?

21 A Yes, sir. That is descriptive.

22 Q If there is another word, I am willing to use  
23 that. I just want to make sure we are on the same wave

1 length, sir.

2 A That is quite a description.

3 Q All right. Now, I'd like you to describe the  
4 gouge marks and you notice there is a diagram -- this is  
5 the Air Force diagram; is that correct, sir?

6 MR. DUBUC: It is Exhibit D9.

7 THE WITNESS: Yes.

8 BY MR. OREN LEWIS:

9 Q Exhibit D9. And you see where it says impact?

10 A Yes, sir.

11 Q And it points towards the dike; is that correct,  
12 sir?

13 A Yes, sir. That is correct.

14 Q And then --

15 A Although observe that the arrow is going to the  
16 west side of the dike.

17 Q Well, it looks to me like it's pointing to the  
18 dike.

19 A Well, it curves up and points directly towards  
20 the west side of the dike.

21 Q All right. You disagree with that?

22 MR. DUBUC: Well, he has stated what it is.

23 MR. OREN LEWIS: Well, I just want to know --

1 MR. DUBUC: Does he disagree with what?

2 MR. OREN LEWIS: That the second impact was pointed  
3 out by this arrow.

4 THE WITNESS: I don't disagree with it, no.

5 BY MR. OREN LEWIS:

6 Q All right. Now, from the point there on the dike,  
7 how far was the -- did the gouge mark go?

8 A Well, it depends.

9 Q From the dike.

10 A Well, it depends upon, of course, what piece of  
11 the aircraft you are talking about.

12 Q Well, going from east to west on the west bank,  
13 was there more than one set of gouge marks?

14 A Yes, sir.

15 Q All right. How many gouge marks were there?

16 A I don't recall by sets, and I assume you mean  
17 parallel rows?

18 Q Yes, sir.

19 A Well, that would be rather difficult to answer  
20 that question.

21 Q Well, would you do the best that you can?

22 A Well, we can start with one, and there is one  
23 path at least within which there appears to be more than one

1 individual mark.

2 Q All right. How far does that path extend?

3 MR. DUBUC: Were you finished?

4 THE WITNESS: (Nodding head, indicating in the  
5 affirmative.)

6 MR. DUBUC: Okay.

7 BY MR. OREN LEWIS:

8 Q How far does that one path extend from the dike  
9 going west?

10 A Well, if you go with the troop compartment, then  
11 the distance is something like around 650 yards, or about --  
12 I get 1,950 feet, just scaling the diagram. Other people  
13 have gotten, I think, a little higher.

14 Q All right. Is there an unbroken path of gouge  
15 marks from the dike to where the troop compartment ended  
16 up?

17 A Well, I don't think the path is unbroken. It  
18 is somewhat variable, of course.

19 Q Well, how much are there tracks, gouge marks,  
20 that lead from the initial impact point to where the troop  
21 compartment ended up, unbroken?

22 MR. DUBUC: Unbroken?

23 MR. OREN LEWIS: Yes.

1 THE WITNESS: Well, I think any individual  
2 gouge marks would necessarily have to be broken, because of  
3 the way the aircraft separated.

4 BY MR. OREN LEWIS:

5 Q All right. Well, how did the aircraft separate?

6 A Well, into several major components, and then,  
7 of course, to a relatively large number of smaller  
8 components.

9 Q All right. Well, where did the airplane separate?

10 A Well, it separated after the cockpit section.

11 Q Well, no, I am speaking -- I am sorry. Would  
12 you show me --

13 MR. DUBUC: In other words, you're asking him  
14 where it separated in terms of a point from the dike? Is  
15 that what you're asking him?

16 MR. OREN LEWIS: Where on the ground.

17 MR. DUBUC: Where on the ground.

18 THE WITNESS: Where on the ground. Yes, sir.

19 MR. DUBUC: He has got it.

20 BY MR. OREN LEWIS:

21 Q Well, would you take that diagram that you have  
22 in front of you, sir, and put an "X" at the point where the  
23 airplane broke apart?

1 MR. DUBUC: Well, this is his. If you are  
2 going to mark this, this is his. Do you want to mark a  
3 copy of the diagram rather than -- this is on his report.

4 MR. OREN LEWIS: We can use this one.

5 THE WITNESS: First, that cannot be done with one  
6 X mark.

7 BY MR. OREN LEWIS:

8 Q Here, Let me pass this to you, sir, and --

9 A I can show you where the separation started.

10 Q All right. Put an X-1 where the separation  
11 started.

12 A Okay. I have done so.

13 Q May I look over your shoulder just so that I  
14 can coordinate with you, sir?

15 A Yes, sir.

16 Q And you have put an X at the dike; is that  
17 correct?

18 A That is correct.

19 Q Would you put a 1 --

20 A I put an x sub-one.

21 Q X-1, okay. And then what happened after that?

22 A I am not sure that I understand the specific  
23 question.



Q Well, we were talking about gouge marks, and you --

A Yes, sir.

Q -- said that the plane began to separate or break apart, I guess, is what you mean.

MR. DUBUC: No, that is not it.

THE WITNESS: No, that is not quite descriptive.

BY MR. OREN LEWIS:

Q Well, at what point on this diagram, going from east to west, did the tail break off?

A I can only give you a range of values.

Q What is the range?

A Well, the range of values, of course, are between the dike and the point at which the tail came to rest.

Q But you can't come any closer than that; is that correct?

A Well, I can tell you that it wasn't at the dike, I think. Extremely unlikely. And that it wasn't at the point in which the tail came to rest.

Q But you cannot do any better than that; is that correct.

MR. DUBUC: You are asking for his best estimate?

MR. OREN LEWIS: I am asking if he has made a calculation of where that happened.

1 THE WITNESS: I have not made any further  
2 estimate than that.

3 BY MR. OREN LEVIS:

4 Q All right. At what point, going from east to west,  
5 did the flight deck break off a hull?

6 A Well, if this diagram is correct --

7 Q I am not representing that it is. I am only  
8 representing that it is the Air Force's diagram.

9 A I understand, but we have to start with something.  
10 If this diagram is correct --

11 Q Have you assumed that it was correct?

12 A I have assumed that it is generally correct, but  
13 it may not be correct in all details.

14 Q Well, let's correct it, then, by your judgment  
15 first. And where is the diagram incorrect, in your opinion?

16 A I don't know that.

17 Q So, you didn't make any attempt to verify and  
18 see whether this diagram was correct; is that right, sir?

19 A I don't know any way that I could verify that.

20 Q Well, I am not --

21 A No.

22 Q -- I am just saying that you never took the  
23 photographs or made any calculations or tried to measure the

1 location of the parts or gouge marks or anything like that?

2 A No, sir. I have not done that.

3 Q All right.

4 A Generally that these records of distribution  
5 patterns are generally pretty good, at least -- as done by  
6 the Air Force, they are generally pretty accurate with  
7 regard to those components that cannot be easily picked up  
8 and moved by someone.

9 Q Well --

10 A I haven't answered your question, I guess.

11 Q No, you really haven't. Would you tell me -- I  
12 believe you told me, sir, that you felt it was generally  
13 correct, but it may not be correct in all details; and I  
14 was just asking you what details might not be correct.

15 A Well, I am just assuming that, you know, if I  
16 say that it is correct, then you are going to call me on  
17 the carpet on the witness stand and --

18 Q If it isn't --

19 A -- describe that that means every last detail,  
20 and I would be -- I am not a betting man, but if I were,  
21 I would maybe bet that --

22 Q That it isn't correct?

23 A Someone could find a little detail here that might

1 not be quite right.

2 Q Well, are there major details in which it is not  
3 correct, or is it correct in all material details?

4 A Is it correct?

5 Q In all material details.

6 A I have assumed that --

7 Q That it is?

8 A In -- the major part is correct, yes, sir.

9 Q Major isn't a very scientific word, and we  
10 lawyers may use it, but you engineers don't ordinarily,  
11 and I am trying to say when you say "major", is it --

12 A Well, yes, I find a discrepancy here, I think.

13 Q All right. Where is that?

14 A This diagram shows -- the way I would interpret  
15 it, three broken trees. That is what the arrow says --

16 Q All right.

17 A -- and I think the photographs show four. Now,  
18 I could be in error about that, but if you want to find out,  
19 we can look at the photographs right quick and straighten  
20 that out.

21 Q All right. So, there are four broken trees?

22 A Yes.

23 Q Anything else?

1 A I don't think I have observed anything else.

2 Q And are the four broken trees in a row?

3 A Yes, sir. They are in a row.

4 Q And there are four and it is in unbroken sequence?

5 In other words, there are four broken trees in a row?

6 A I believe that that is correct, yes, sir. That  
7 is my recollection.

8 Q All right. And then any other discrepancies  
9 that you have observed?

10 A As I have stated before --

11 Q In Exhibit D9?

12 A -- I have not observed any, and I have not checked  
13 for any.

14 Q All right. Do you see the flight deck, for  
15 example, the tracks leading up to it are shown in an arc?

16 A Yes, sir.

17 Q What is that arc?

18 A What is that arc?

19 Q Yes.

20 A It is just the path followed by the flight deck.

21 Q Well, did you measure the degree of arc?

22 A No, sir, I have not measured the degree of arc.

23 Q Now, when the airplane struck the dike, would you

1 draw an arrow for me in the river side of the dike as to  
2 the direction of flight of the aircraft?

3 MR. DUBUC: The question, I object to the form.  
4 It is suggesting the airplane rather than the wheels. You  
5 mean the wheels struck the dike? That is what he's  
6 testified to.

7 MR. OREN LEWIS: Mr. Dubuc, I have always thought  
8 that the wheels were a necessary component of airplanes.

9 MR. DUBUC: All right.

10 MR. OREN LEWIS: Particularly this one.

11 MR. DUBUC: Why don't I go ahead and assume later  
12 that it was the airplane and not the wheels? You mean any  
13 part of the airplane?

14 MR. OREN LEWIS: Yes, but I am interested in --  
15 the question is on the flight path, the direction of travel  
16 of the aircraft, and just prior to the time that it impacted  
17 with the dike or any part of it impacted with the dike.

18 THE WITNESS: I am going to ask you to ask that  
19 question again.

20 BY MR. OREN LEWIS:

21 Q I would be happy to.

22 A You are talking about the whole aircraft, at  
23 least --

1 Q Well, if I took a piece of paper, sir, and I  
2 drew a little airplane on it --

3 A Yes, sir.

4 Q -- and I used my heavier line for the direction  
5 of travel, I am going to put a little arrow in the front of  
6 the airplane; can you show me, sir, which direction the  
7 airplane was going when it struck the dike or any part of it  
8 struck the dike?

9 A Yes, sir.

10 Q All right. Would you --

11 A Do you want me to draw this on the diagram?

12 A Yes, I would.

13 All right, sir. Now, would you draw a dotted  
14 line leading up to the point that any part of the aircraft  
15 struck the dike?

16 A All right. I have done that.

17 Q Now, have you done that as precisely as you can?

18 A There could be nothing considered to be precise  
19 about what I have done here.

20 Q All right. I am just trying to get the line of  
21 travel just as good as I can.

22 A This is generally from east to west.

23 Q All right. Assuming that the arrow here is due

1 north, was the airplane flying due west?

2 A Very nearly.

3 Q Well, what degree west was it going?

4 A What degree from due west?

5 Q Yes.

6 A Do you mean --

7 Q Well, I mean it was heading west and if north  
8 is zero and south is 180 degrees --

9 MR. DUBUC: He is drawing it based on the arrow  
10 being north.

11 THE WITNESS: 270 degrees, and that could be  
12 275 degrees or --

13 BY MR. OREN LEWIS:

14 Q From 270 to 275?

15 A 270 plus or minus 10 degrees I would say would  
16 probably do it.

17 Q That is 20 degrees. You can't tell me within  
18 the 20; is that right, sir?

19 A Well --

20 Q You can't make it finer than 20 degrees?

21 A 270 plus or minus one, but I don't know how  
22 accurate that it.

23 Q Well, I want you to be as accurate as you can, sir.



1 MR. DUBUC: Well, Mr. Lewis, you are asking him  
2 to draw it based upon an arrow on the diagram, and that is  
3 what he has given you the estimate on. He is not able to  
4 give you the exact degrees unless you want to have a  
5 compass at the place and check whether north is north. But  
6 he has given you a reference as you asked him to from the  
7 indicated direction of north.

8 MR. OREN LEWIS: I understand that, and I am  
9 assuming that north is as precisely indicated on this chart  
10 here, because the grid lines are oriented --

11 MR. DUBUC: Right.

12 MR. OREN LEWIS: -- north and south, east and  
13 west; is that correct, sir?

14 THE WITNESS: The grid lines are oriented -- that  
15 is what this diagram would indicate, yes.

16 BY MR. OREN LEWIS:

17 Q So I want you to assume then that the grid lines  
18 are accurate, that north is where it is and east is in the  
19 direction to the right, and west is the direction to the  
20 left. And so assuming that that is correct, then, I'd  
21 like you to tell me as closely as you can, from your  
22 understanding of the data that you have reviewed, the  
23 direction of the airplane just immediately prior to its

1 touching the dike.

2 MR. DUBUC: As indicated on this diagram?

3 BY MR. OREN LEWIS: .

4 Q Yes, sir. Or your analysis, if you think it is  
5 wrong or anything like that, you can correct that, too. I  
6 am just trying to get the direction of travel.

7 MR. DUBUC: You have asked him twice, and he has  
8 answered it, and he has also drawn a line.

9 MR. OREN LEWIS: He has a 20 degree spread --

10 MR. DUBUC: That's right.

11 MR. OREN LEWIS: -- and I am just asking him if  
12 he can close it any. If he can't, I understand that. I am  
13 not going to argue with the witness.

14 THE WITNESS: Well, I have not done any analysis  
15 on this, other than what we have done here in a couple of  
16 minutes today. And you know, it is ridiculous to think that  
17 I could be more than maybe plus or minus ten degrees.

18 BY MR. OREN LEWIS: .

19 Q All right. Then that hasn't been part of your  
20 calculations, sir?

21 A No, sir.

22 Q All right. You just have to excuse me. I  
23 didn't, you know, I thought that you would try to calculate

1 how the parts ended up by the direction of travel. And  
2 that didn't have anything to do with it?

3 A No, sir. It does not.

4 Q All right. Now, how long is the gouge mark or  
5 path of wreckage leading from the dike in an unbroken  
6 sequence?

7 A In an unbroken?

8 Q Yes, sir.

9 MR. DUBUC: You have asked him that before. he  
10 said there isn't one, there are several marks.

11 MR. OREN LEWIS: I thought he said there was a  
12 path made up of several marks.

13 MR. DUBUC: He said there were several paths and  
14 he gave you an example of one. Now, you have asked him and  
15 he's answered it.

16 MR. OREN LEWIS: Well, I misunderstood the witness  
17 and I am sorry, Doctor, but are there several paths leading  
18 from the dike?

19 THE WITNESS: Well, there is one, of course,  
20 general major path.

21 BY MR. OREN LEWIS:

22 Q That is what I thought you said.

23 A And within that path, there are numerous marks.

1 If you try to follow one mark in an aircraft accident --  
2 generally, this is going to run out, but something will  
3 pick up over here and continue for a while, and something  
4 else will pick up and continue for a while.

5 Q I understand.

6 A So, I really don't understand quite what you are  
7 asking me. And --

8 Q I just want to know --

9 A -- I don't think it is important.

10 Q The path that you have through here, on this  
11 chart, D9, which is Defendant Lockheed's exhibit --

12 MR. DUBUC: That he has.

13 MR. OREN LEWIS: Well, he has attached it to his  
14 report.

15 MR. DUBUC: He didn't refer to the chart.

16 MR. OREN LEWIS: No, we know the Air Force did it.

17 MR. DUBUC: Okay.

18 MR. OREN LEWIS: But you did attach it to his  
19 report, and I have assumed that he has relied on it. We  
20 will never finish the deposition at that rate.

21 I just want you to tell me, sir, do you see the  
22 line that goes from the dike out away from the dike?

23 THE WITNESS: Yes, sir. I see that.

1 BY MR. OREN LEWIS:

2 Q And you see there is a break past that?

3 A Yes, sir. I do.

4 Q All right. I want you to tell me, if you can,  
5 how long that path is as shown here?

6 A All right. I am going from the point that I have  
7 marked X-1 --

8 Q Yes, sir.

9 A -- out, roughly 273 degrees to the end of a mark  
10 that appears in the diagram, which may or may not be a "path"  
11 but it ends about midway between 1225 and 1400 yards --

12 Q Have you --

13 MR. DUBUC: Wait a minute, he is not finished.

14 MR. OREN LEWIS: I understand he is going to  
15 calculate the measurement.

16 You didn't do that before; is that right?

17 THE WITNESS: No, sir. Do you want a number?

18 BY MR. OREN LEWIS:

19 Q Yes.

20 A All right. And it goes a little further than  
21 midway, and I would say it goes about 55 percent of midway.

22 Do you want this in yards, feet, miles?

23 Q Feet. Feet.

1           A     Well, I came up -- I come up with 663 and  
2 three-quarters feet.

3           Q     All right. Would you write 663 feet on the diagram  
4 that you have in front of you to indicate the area and also  
5 write the 273 degrees?

6                     Now, would you write an X-2 at the end of that  
7 line there? In other words, the western end of it?

8           A     Well, I've got the X-2 and you asked me to do  
9 something else?

10          Q     Put the degrees --

11          A     200 and -- what did I say?

12          Q     273.

13          A     All right. I have done that.

14          Q     All right. And you put the 663 feet, right?

15                 MR. DUBUC: And three-quarters.

16                 THE WITNESS: And three-quarters.

17                 BY MR. OREN LEWIS:

18          Q     All right. Now, from the point X-2, sir, -- let  
19 me make sure we are speaking of the same thing. Would you  
20 put an arrow or something? I just want to be clear.

21                     All right. From point X-2 to the troop  
22 compartment, is there any gap in the gouges?

23          A     Do you mean in the diagram?

1 Q Or on the ground?

2 A Or on the ground.

3 Q On the ground.

4 A In the diagram, there would be a gap.

5 Q And how big is the gap on the diagram?

6 MR. DUBUC: Wait a minute, He is not finished.

7 THE WITNESS: On the ground, there will be no  
8 gap.

9 BY MR. OREN LEWIS:

10 Q All right. On the diagram, how much is the gap  
11 that is shown on the diagram? In other words, how many  
12 feet?

13 A I get 236 and a quarter feet.

14 Q 236 -- pardon, sir?

15 A And a quarter feet.

16 Q All right. And would you show -- put an X-3  
17 at the beginning of the mark shown that leads to the troop  
18 compartment, would you do that?

19 A Okay. Well, I am not being terribly accurate  
20 here. It is going to be really a little less than that  
21 number that I have given you, so I will correct it.

22 Q What is the distance?

23 A Standby. (Pause) It is about 233 feet.

1 Q All right. And would you write on there showing  
2 the gap shown here of 233 feet?

3 MR. DUBUC: This is the gap based on the marks  
4 on D9.

5 BY MR. OREN LEWIS:

6 Q Yes, sir, and then an X-3 at the point that they  
7 show that.

8 A Standby. I think I have made an error here.  
9 (Pause) I think I have made an error. It is 210 feet.

10 Q All right. You have an X-2 to X-3. I want an  
11 X-3.

12 A You want an X-3 down here?

13 Q No. Let's keep them all on the same side.

14 A All right.

15 Q And just draw an arrow to the point that that  
16 goes to.

17 A Okay. Go ahead.

18 Q I'm sorry, sir?

19 A I said go ahead.

20 Q All right. Now, what is the direction, compass  
21 direction, true direction, from X-2 to X-3?

22 A Well, there is a compass direction from X-2 to  
23 X-3.



1 Q Yes.

2 A Just between these two points, that is all you  
3 want?

4 Q Yes, sir.

5 MR. DUBUC: As shown on D9?

6 MR. OREN LEWIS: As shown on D9.

7 MR. DUBUC: Well, you realize that he doesn't have  
8 a compass on his, so I think I will object to having him  
9 try to estimate without a compass.

10 BY MR. OREN LEWIS:

11 Q Can you do that?

12 A Well, I can estimate. It will be, you know, an  
13 estimate, but --

14 MR. DUBUC: I am going to object to having him do  
15 this without a compass.

16 MR. OREN LEWIS: He said he can do it.

17 MR. DUBUC: Without a compass?

18 THE WITNESS: Well, as long as you understand  
19 that it is without a compass.

20 MR. DUBUC: I want to confer with him.

21 MR. OREN LEWIS: Let the record show that counsel  
22 is conferring with the witness.

23 MR. DUBUC: I'm conferring with him as to whether

1 he can do it or not.

2 All right. If you can do it. Recognize that  
3 it is an estimate.

4 MR. OREN LEWIS: I understand that he has no  
5 compass.

6 Did you do the estimate of the --

7 MR. DUBUC: He is still doing it.

8 THE WITNESS: Okay. And you want me to write  
9 that down here?

10 BY MR. OREN LEWIS:

11 Q Yes, if you would.

12 Q Do you want me to draw that line in here?

13 Q No. No, just leave that, because the apparent  
14 gap may be obscured here, and I don't want to do that. If  
15 you can indicate that without -- or just write on the side  
16 you know, from X to X is so many degrees.

17 MR. DUBUC: He has got it in the corner.

18 MR. OREN LEWIS: That is fine.

19 So that is 2.96.56 degrees true; is that your  
20 estimate?

21 THE WITNESS: That's correct.

22 BY MR. OREN LEWIS:

23 Q All right. Now, what is the arc in the -- well,

1 would you put an X-4 at the eastern end of the troop  
2 compartment as shown there?

3 MR. DUBUC: On D9?

4 MR. OREN LEWIS: Yes, sir. On D9.

5 THE WITNESS: Yes, sir.

6 BY MR. OREN LEWIS:

7 Q Now, X-3 and X-4 is shown as an arc on this  
8 diagram; is that correct?

9 A At least there is an arc down between these two  
10 points, yes, sir.

11 Q All right. Did you measure that arc?

12 A By measuring the arc, do you mean --

13 Q Showing the degree of arc?

14 A Well, you will have to tell me what you mean by  
15 that. Do you mean the term the radius curvature of the arc?

16 Q The radius, yes.

17 A And define the angle?

18 Q Yes, sir.

19 A No, sir, I did not.

20 Q Now, would you describe the wreckage of the troop  
21 compartment after it came to a rest?

22 A Yes, sir.

23 Q Would you start with the front?

1 A Fron of the troop compartment?

2 Q Yes, the forward end, exterior. What parts of  
3 the structural members, if any, of the aircraft were attached  
4 to the remains of the troop compartment?

5 A Well, there is a truss like structure at the forward  
6 end of this piece of the airplane, which has been referred  
7 to as the troop compartment. That truss, I don't think, is  
8 in the troop compartment properly.

9 Q Well, I am not suggesting that it is. But just  
10 so we can have common nomenclature to the Exhibit D9, has  
11 a structure identified as troop compartment. Do you see  
12 that, sir?

13 A Yes, sir.

14 MR. DUBUC: That is what he is telling you.

15 BY MR. OREN LEWIS:

16 Q I understand that. And so that piece of the airplane --

17 MR. DUBUC: That is what he is describing.

18 THE WITNESS: That is what I am talking about.

19 BY MR. OREN LEWIS:

20 Q All right. Would you describe the truss that was  
21 attached to that portion of the airplane?

22 A Yes, sir. It is a typical open truss.

23 Q How many members does it have?

1 A I wouldn't have the faintest idea without  
2 looking at the photographs.

3 Q What was the function of that truss?

4 A I am not sure.

5 Q And when you say truss, you are speaking of  
6 something that looks like a series of --

7 A Bridge truss.

8 Q Like a bridge truss, sir?

9 A Yes, sir.

10 Q And was that on the same level as the troop  
11 compartment? I mean, was it on the same level as the  
12 passenger seats in the troop compartment?

13 A Well, I can't answer that. If you are talking  
14 about, you know, plus or minus six, eight, twelve inches,  
15 and that sort of thing.

16 Q Yes.

17 A Generally, it is on the same level. Generally,  
18 it is on the same level.

19 Q All right. I am speaking of generally, sir.

20 Now, were any of those truss members, and I am  
21 speaking of the individual beams, if that is a reasonable  
22 word to use, deformed?

23 A I don't know.

1 Q Did you undertake to find out?

2 A I have looked at the photographs and I didn't see  
3 any apparent deformation, but I didn't look to see whether  
4 there were some that were deformed or not deformed. Just a  
5 casual observation.

6 Q All right. That wasn't part of your study, then;  
7 is that correct?

8 A That is correct.

9 Q Did you see that photograph before you wrote  
10 your report?

11 A I don't think so.

12 Q Well, describe the photographs that you had  
13 available to you of the troop compartment at the time you did  
14 your analysis and wrote your report.

15 MR. DUBUC: We have already covered that. The series  
16 that he told you about.

17 MR. OREN LEWIS: I want him to tell me what  
18 pictures --

19 MR. DUBUC: Describe pictures?

20 MR. OREN LEWIS: Yes, what he saw of the troop  
21 compartment. That piece of the airplane.

22 Did it include any views of the truss section that  
23 you described?

1 THE WITNESS: I don't recall whether it did or  
2 not.

3 BY MR. OREN LEWIS:

4 Q What hold the wings to the hull?

5 A I don't know.

6 Q Is there some kind of a structural member?

7 MR. DUBUC: He said he doesn't know. What is  
8 the next question? You have asked him and he has answered.

9 BY MR. OREN LEWIS:

10 Q You have no idea of whether there was any kind  
11 of a structural member holding the wings?

12 A Oh, yes. Yes, I have an idea about that.

13 Q I feel sure you do, and Mr. Dubuc says you don't.

14 MR. DUBUC: Well, you asked him specifically  
15 what one does, and you said does any, and he says he hasn't  
16 an idea about any, but he does remember a specific one. I  
17 think that is what he is saying, but go ahead. Do you know  
18 the question? Do you understand the question?

19 THE WITNESS: No, I will have the question again,  
20 if I may.

21 BY MR. OREN LEWIS:

22 Q All right, sir. I understand that --

23 MR. DUBUC: Let's have the question.

1 MR. OREN LEWIS: Mr. Dubuc, allow me to -- he  
2 wants an explanation.

3 MR. DUBUC: No, he just wants the question, not  
4 an explanation. What is the question?

5 THE WITNESS: What is the question?

6 BY MR. OREN LEWIS:

7 Q All right. Is there any kind of a structural  
8 member shown in the photographs that you have seen which has  
9 as its primary function the attachments of either the  
10 wing to the airplane or that are part of the wing structure?

11 A I don't know.

12 Q Do you know whether the wings broke off at any  
13 time from the hull of this aircraft?

14 A At least the wing and the spar, a portion of the  
15 fuselage immediately above and below, and the wing  
16 separated at some time.

17 Q Do you know at what time it separated?

18 A No, sir. I don't.

19 Q And you wouldn't know in what point of travel  
20 between X-1 and X-4 the wing separated?

21 A As to a specific point?

22 Q Yes, sir.

23 A No, sir, I don't.



1 MR. OREN LEWIS: Could we take a two-minute  
2 break?

3 (Brief recess.)

4 BY MR. OREN LEWIS:

5 Q Sir, at the time the wings separated from the  
6 hull, how many inches were still in place?

7 A I have not looked at that. I don't know the  
8 answer to that.

9 Q Well, where, at what point, between X-1 and  
10 points west, going from X-1 west, did the first engine  
11 separate from the wing?

12 A I have not looked at that detail.

13 Q How strong is the connection between the engine  
14 and the wing? In other words --

15 MR. DUBUC: You mean what the strength of the  
16 material is?

17 MR. OREN LEWIS: Yes. In other words, what kind  
18 of force does it take to tear the engine off of the wing?

19 THE WITNESS: About the same force it would  
20 take to tear the engine out of a Cessna two-place 150. I  
21 could be wrong about that. I don't have an answer to that.

22 BY MR. OREN LEWIS:

23 Q How much force does it take to tear the engine out

1 of a Cessna two-place 150?

2 A I don't have an answer to that pretty accurately.  
3 You know, it is a six or seven G airplane at most, and I  
4 am just anticipating that this C5A is at least a six G  
5 airplane.

6 Q All right. Was that one of the assumptions that  
7 you made in your preparing your report, sir?

8 A No, sir. I doesn't have anything to do with my  
9 report at all.

10 Q Well, do you know how many Gs the airplane would  
11 take before it would be expected to break up structurally?

12 MR. DUBUC: I object. He says it's got nothing  
13 to do with his report, so what is the relevance of it,  
14 Mr. Lewis?

15 MR. OREN LEWIS: If you will forgive me, I don't  
16 think I have to have everything relevant. It only needs  
17 to lead to relevant evidence, and I don't think I have to  
18 explain, Mr. Dubuc.

19 MR. DUBUC: Oh, yes. Yes, if I object to the  
20 form of the question and if I call for relevance or anything  
21 leading to relevant information. He has already said he  
22 didn't use the figure or the concept in reaching his figures.  
23 It doesn't have any relevance and he said that. So, all

1 this does is prolong the deposition. That is the point,  
2 and we know we have -- I have already told you, we have  
3 a 6:15 airplane, and certainly Dr. Turnbow wants to make  
4 that. And so we will go on until at least 5:15 or whatever.

5 MR. OREN LEWIS: I am going to suspend at 5:15  
6 so that the gentleman can catch his airplane.

7 MR. DUBUC: Well, no, I am not willing to bring  
8 him back, because you spent the entire -- almost three  
9 hours now on many things that doesn't have anything to do  
10 with his field, and that is what he is here for.

11 MR. OREN LEWIS: Mr. Dubuc --

12 MR. DUBUC: This is not overall discovery, it  
13 is pretrial examination of an expert. This is not general  
14 pretrial discovery.

15 MR. OREN LEWIS: Mr. Dubuc, I think I have a  
16 right to find out what he considered and what he didn't  
17 and --

18 MR. DUBUC: Well, if you would --

19 MR. OREN LEWIS: Let me finish, Mr. Dubuc, please.

20 MR. DUBUC: That would shorten it.

21 MR. OREN LEWIS: You won't let me finish? Now,  
22 you just talk on and let me know when you are finished,  
23 and then I will start.

1 MR. DUBUC: Well, it certainly would shorten it  
2 if you want to ask him what he has considered and what he  
3 didn't consider. As you know, the rule on expert witnesses  
4 is not quite the same as Rule 30 and Rule 26. It isn't  
5 general discovery. It is defined and restricted to certain  
6 things as to what his opinion is and what he based his  
7 opinion on and what factors he considered, and the reasons  
8 for it. It is not general discovery.

9 MR. OREN LEWIS: Just tell me when you are  
10 finished.

11 MR. DUBUC: I am finished.

12 MR. OREN LEWIS: Mr. Dubuc, the gentleman said  
13 that he assumed that this was a six G airplane.

14 MR. DUBUC: And he also stated that it had nothing  
15 to do with his opinion. He is assuming for the purpose of  
16 your question, but not for his opinion. He has told you  
17 that already.

18 MR. OREN LEWIS: Mr. Dubuc, you and I can debate  
19 all the way to 5:15 and if you want to use the time that  
20 way --

21 MR. DUBUC: My statement on the record is saying  
22 what is your next question, Mr. Lewis?

1 BY MR. OREN LEWIS:

2 Q My question is, sir, how do you come to the  
3 conclusion that this is a six G airplane? Did anyone tell  
4 you that?

5 A No. No one has told me that.

6 Q But that is your judgment; is that correct?

7 A I anticipate that this airplane would generally  
8 meet F.A.A. requirements for transport type aircraft, and  
9 perhaps a little bit more so that possibly the airplane  
10 might be as strong as six Gs.

11 Q But as an engineer, you would expect the airplane  
12 to be able to take six Gs before it began to destruct?

13 MR. DUBUC: I object. He has just told you he  
14 doesn't know that. You are directed not to answer that  
15 question.

16 What is the next question?

17 BY MR. OREN LEWIS:

18 Q All right. How deep are the gouge marks from X-3  
19 to X-4?

20 MR. DUBUC: The gouge marks of the airplane?

21 MR. OREN LEWIS: Yes. That is all there is  
22 between X-3 and X-4, I believe.

23 THE WITNESS: I don't have a definite measurement

1 for you. I am sure that they are probably variable.

2 BY MR. OREN LEWIS:

3 Q How wide are the gouge marks between X-3 and X-4?

4 A It depends on which gouge marks you are talking  
5 about, of course.

6 Q Well, I am speaking of the gouge marks that I  
7 understood -- well, maybe I am making an unfair assumption.

8 Were there gouge marks between X-3 and X-4 on  
9 the ground?

10 A That is what this shaded pattern would indicate.

11 Q The cross-marked area, sir?

12 A Cross X mark labelled debris area in the ledger.

13 Q Now, are there tracks that lead up from X-3 to  
14 the troop compartment?

15 A Yes, sir.

16 Q Now, how many tracks are there?

17 A On this diagram?

18 Q On the ground.

19 A There is probably an infinite number on the ground.

20 Q Now, are there primary gouge marks?

21 A I would say that there are two primary gouge marks,  
22 yes, sir.

23 Q All right. Can you tell us the length of both

1       gouge marks from X-3 to X-4?

2           A       X-3 to X-4, I can give you a reasonable proximation.

3           Q       All right.

4           A       I get about 1118 and a half feet, the way I have  
5       computed it on the diagram.

6           Q       Would you write that down?

7           A       On the diagram?

8           Q       I want to know that, certainly.

9           MR. DUBUC: Are you talking about what is on the  
10       diagram as opposed to what is on the ground?

11          MR. OREN LEWIS: Well, I'm going to go to that.  
12       Do you know what goes on the ground? Do you have any  
13       measurement of the gouge marks on the ground?

14          THE WITNESS: No, sir.

15          BY MR. OREN LEWIS:

16          Q       So if you don't use this diagram, you don't have  
17       any way of knowing that; is that correct?

18          A       That is correct.

19          Q       And you have no measurements or assets to  
20       measurements by anyone other than this diagram as to these  
21       distances; is that correct?

22          A       That is correct.

23          MR. DUBUC: Which distances?

1 MR. OREN LEWIS: The distances from one point to  
2 the other on the Defendant's Exhibit D9.

3 MR. DUBUC: You mean the gouge marks by the  
4 airplane?

5 MR. OREN LEWIS: Or anything else.

6 MR. DUBUC: Or anything else?

7 MR. OREN LEWIS: Anything at all.

8 Isn't that correct, Dr. Turnbow?

9 THE WITNESS: That is correct. Yes, sir.

10 BY MR. OREN LEWIS:

11 Q I mean, if there is, then I don't mean to be  
12 tedious. I would like to know what they are.

13 A I don't have access to other information.

14 Q All right, sir. Now, I didn't write that down.  
15 Would you state the distance from X-3 to X-4?

16 MR. DUBUC: 1118 and a half.

17 MR. OREN LEWIS: Pardon?

18 MR. DUBUC: 1118 and a half.

19 BY MR. OREN LEWIS:

20 Q This is in feet, right, sir?

21 A That is correct. Yes, sir.

22 Q Now, how widely separated are the two primary  
23 gouge marks?



1 A. In feet?

2 Q. Yes, sir.

3 A. I would not be able to tell you.

4 Q. All right.

5 A. But they will be equal to the width of the floor  
6 area plus maybe as much as two or three feet; and I should  
7 have said the floor area of the troop compartment.

8 Q. All right. What is the width of the floor area  
9 of the troop compartment?

10 A. I don't know.

11 Q. Do you know how much that structure weighs?

12 A. No, sir, I don't.

13 Q. I mean, the wreckage that is on the diagram.

14 A. No, sir, I don't.

15 Q. Did you compute the surface of the exterior of  
16 the troop compartment?

17 A. The surface of the exterior?

18 Q. Yes, sir.

19 A. That is the open end?

20 Q. No. Well, did you compute the surface of the open  
21 end?

22 A. No.

23 Q. Did you compute the surface of the other -- rest of

1 the area of the stern and the top or surrounding the top  
2 and walls, or whatever you would call the upper part of  
3 the hull?

4 A I computed no surface areas.

5 Q All right, sir. Did you -- and, you have already  
6 told us that you don't know how deep those gouge marks are  
7 from X -- the primary gouge marks, I am speaking of, from  
8 the point X-3 to X-4; is that correct?

9 A That is correct.

10 Q You don't know how deep they are or how wide they  
11 are; is that correct?

12 A I have given you the width.

13 Q Well, I am speaking of the width of each mark.

14 A Oh, the width of each mark?

15 Q Yes, sir.

16 A No, sir. I don't believe I have a measurement  
17 on that.

18 Q All right. Now, did you calculate how fast the  
19 troop compartment decelerated from the point X-3 to X-4?

20 A Yes, sir, in a way.

21 Q All right. How did you do that?

22 A I computed an average deceleration from X-1 to  
23 X-4.

1 Q All right. Well, are you suggesting that there  
2 are gouge marks of the same depth from X-1 to X-4?

3 MR. DUBUC: You are talking about --

4 MR. OREN LEWIS: I am talking about the primary  
5 gouge marks.

6 MR. DUBUC: The gouge marks of the airplane?

7 MR. OREN LEWIS: Yes.

8 THE WITNESS: No, I am not suggesting that.

9 BY MR. OREN LEWIS:

10 Q All right. Now, did you calculate the coefficient  
11 of friction of any part of the wreckage?

12 A Coefficient of the friction of any part of the  
13 wreckage?

14 Q Yes.

15 A Yes, sir. In a way, I have done that.

16 Q All right. How did you do that?

17 A Well, I calculated the average coefficient friction.

18 Q The average coefficient of friction of what?

19 A That is for the airplane.

20 Q All right. Now, what is the formula for  
21 calculating the coefficient of friction that you used?

22 A It is equal to the average of deceleration  
23 measured in Gs.

1 Q All right. Now, would you tell me how you say  
2 that in mathematical terms? What is the formula?

3 A I just stated that.

4 Q I beg your pardon, sir?

5 A The average coefficient of friction --

6 Q Yes.

7 A -- is equal to the average G level or average  
8 deceleration measured in Gs. That is the formula.

9 Q So, is it your testimony, sir, that as an  
10 engineer, that I can pick any point along the line and  
11 you can tell me with any precision what the G force was at  
12 that point?

13 A At that point? No, sir, you cannot do that.

14 Q So when you take average, the average is like  
15 many averages, inaccurate, or may be inaccurate, for any  
16 particular point; is that correct?

17 A For any particular point, well, it is not in-  
18 accurate in the sense that it's accurately what you have,  
19 the average.

20 Q But it is an average?

21 A It is an average, that is correct.

22 Q All right. Now, what is the coefficient of  
23 friction of a body weighing whatever the troop compartment

1 weighed, passing through material? In other words, the  
2 soil, to the depth that it was passing through some point  
3 three to point four?

4 A Well, you have asked a question here that is kind  
5 of a meaningless question, and I am not being --

6 Q It is as good as I can do.

7 A -- critical here, Mr. Lewis, but coefficient of  
8 friction is not really totally descriptive here. It is  
9 really coefficient of resistance.

10 Q If you prefer.

11 A Okay. And there is quite a difference.

12 Q All right.

13 A And what I have done is to give you the average  
14 coefficient of the resistance or the deceleration distance  
15 covered by the troop compartment.

16 Q Well, would you tell me what the high point is?

17 A What the high point is?

18 Q In Gs.

19 A In Gs?

20 Q Yes.

21 A My best estimate would be the order of three times  
22 the average value.

23 Q And what is the average value?

1 A We are talking about this accident, now?

2 Q Yes.

3 A Okay. The average G value I computed was 1.66.

4 Q All right. And so what is 3.166?

5 A It would be about five Gs, but I will get it  
6 for you exactly.

7 Q All right.

8 A It is about 4.98.

9 Q All right. Is five close enough to talk about,  
10 or should we say 4.98?

11 A No, five is fine.

12 Q Five is reasonable to you?

13 A Yes, sir.

14 Q All right. Now, can you tell me at what point  
15 from X-1 to X-4 was the G force on the troop compartment  
16 five?

17 A At what point?

18 MR. DUBUC: You are talking about on the airplane,  
19 right?

20 MR. OREN LEWIS: No. He said that it was five.

21 THE WITNESS: (Nodding head, indicating in the  
22 affirmative.)

1 BY MR. OREN LEWIS:

2 Q At what point was it five?

3 A Well, specifically, I can't answer that question.  
4 I don't think I should address myself to it.

5 Q Can you tell me how long it was five?

6 A Not very long.

7 Q Can you give me any idea how long it was five?  
8 Did you calculate that?

9 A I have looked at it from this standpoint. Let's  
10 just suppose there is five for the total distance.

11 Q Pardon?

12 A Let's just suppose it is five for the total  
13 distance.

14 Q From X-1 to --

15 A From X-1,

16 Q -- X-4.

17 A Uh-huh.

18 Q All right.

19 A And we can come up with some conclusions. Okay.

20 Q Well, you just tell me how you explain it.

21 MR. DUBUC: That is what he is going to do.

22 THE WITNESS: Well, that is what I am going to do.

23 Now, I haven't done this, but I will do it on my computer

1 here and give you the answers.

2 BY MR. OREN LEWIS:

3 Q Well, I am really interested in what you did,  
4 Doctor.

5 MR. DUBUC: Well, let him finish. You asked him  
6 to do it, and he is going to do it.

7 MR. OREN LEWIS: Mr. Dubuc, I don't want you --

8 MR. DUBUC: Well, you keep changing your question  
9 as to whether or not he's going to be able to do it or  
10 not.

11 MR. OREN LEWIS: Well, he asked me. He said  
12 that he had not done it. And I am asking him --

13 MR. DUBUC: All right. You asked him to do it.

14 MR. OREN LEWIS: I am trying to get the basis,  
15 the factual basis of what he knows and what he doesn't  
16 know.

17 MR. DUBUC: But your question was would you do it.

18 MR. OREN LEWIS: And he said let's assume that  
19 it was five all the way, and then since that isn't the  
20 case --

21 MR. DUBUC: And then you said explain that.

22 MR. OREN LEWIS: I will withdraw that, Mr. Dubuc.

23 MR. DUBUC: All right.



1 MR. OREN LEWIS: You are going to keep this --  
2 we are going to be three days instead of only one.

3 MR. DUBUC: No, we are only going to be today.

4 MR. OREN LEWIS: Oh, we will see, Mr. Dubuc.

5 MR. DUBUC: Yes, we will.

6 MR. OREN LEWIS: We will definitely see that.

7 MR. DUBUC: We will.

8 MR. OREN LEWIS: You deposed Mr. Timm for a rather  
9 long time.

10 MR. DUBUC: I haven't deposed Mr. Timm at all  
11 in this aspect of this case.

12 MR. OREN LEWIS: You asked him a great deal --

13 MR. DUBUC: Not on this aspect of the case.

14 MR. OREN LEWIS: On any aspect of the case. You  
15 took rather a long time.

16 MR. DUBUC: I haven't had a chance to depose  
17 Mr. Timm. I was supposed to do that this morning, and he  
18 was withdrawn.

19 MR. OREN LEWIS: Do you want to debate that right  
20 now, Mr. Dubuc?

21 MR. DUBUC: That is a fact. I don't have to debate  
22 it.

23 MR. OREN LEWIS: Do you want to debate it? I will

1 tell you that we did not have the pictures. We have not  
2 had an opportunity to analyze the data, Mr. Dubuc.

3 MR. DUBUC: What is your next question, Mr. Lewis?

4 BY MR. OREN LEWIS:

5 Q Sir, how long, in your calculations, was any  
6 occupant in the troop compartment subjected to five Gs?

7 A Well, it couldn't have been very long, and more  
8 specifically, I have kind of done this for you in my  
9 report.

10 Q All right. Would you direct me to that?

11 A Yes, sir.

12 MR. DUBUC: Exhibit D1303, the report number.

13 THE WITNESS: Look at page six, if you would,  
14 please.

15 BY MR. OREN LEWIS:

16 Q Is it numbered six, sir?

17 A It is not numbered.

18 Q It is not numbered?

19 A No, sir.

20 MR. DUBUC: The last page has the words "the  
21 wreckage diagram" and at the bottom there is asterisk that  
22 says see Appendix One.

1 BY MR. OREN LEWIS:

2 Q All right. I am looking at that page.

3 A If you read the last couple sentences in the  
4 paragraph --

5 MR. DUBUC: Well, read it to him.

6 THE WITNESS: All right. The reader should  
7 observe carefully the fact that such peaks, that is five  
8 Gs, cannot physically be applied for any appreciable period  
9 of time otherwise the aircraft would have to stop and  
10 much less at 1950 feet. The value would be 646 feet at  
11 five Gs constant deceleration.

12 Now, we know it didn't stop at 646 feet, so we  
13 know that the G level was generally less than five Gs over  
14 the period in question.

15 BY MR. OREN LEWIS:

16 Q How long was it at five Gs? You used the  
17 expression couldn't be very long or very long. Those are  
18 not engineering terms, as I understand it. I would like to  
19 know if you have calculated how long?

20 MR. DUBUC: He has just read to you how to calculate  
21 it.

22 BY MR. OREN LEWIS:

23 Q How long?