

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF COLUMBIA

FRIENDS FOR ALL CHILDREN, INC., as legal
guardian and next friend of the named 150
infant individuals, et al.,

Plaintiff

-against-

Civil Action No. 76-0544

LOCKHEED AIRCRAFT CORPORATION

Defendant and Third-Party Plaintiff

-against-

THE UNITED STATES OF AMERICA

Third-Party Defendant

Deposition of:

DOUGLAS E. BUSBY, M.D.

Friday, December 18, 1981

Washington, D. C.

GASDOR REPORTING COMPANY
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Deposition of DOUGLAS E. BUSBY, M.D. was taken,
pursuant to notice, before Albert J. Gasdor, a Notary Public in
and for the District of Columbia, commencing at 1:48 p.m., Friday,
December 18, 1981, in the law offices of Haight, Gardner, Poor and
Havens, Suite 1000, 1819 H Street, N.W., Washington, D. C.

APPEARANCES:

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Friday, December 18, 1981

Washington, D. C.

DEPONENT:

DIRECT EXAMINATION

DOUGLAS E. BUSBY, M.D.

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1 MR. DUBUC: It is now 1:48. The deposition was
2 scheduled for 1 p.m. I understand that Doctor Busby's air-
3 plane was late, and we are commencing at 1:48.

4 We also understand that efforts are being made for
5 us to meet with Judge Oberdorfer for a hearing he is having
6 at 2:30. We will suspend in time to attend his hearing. It
7 has been agreed this will be a four-hour net deposition. Is
8 that correct?

9 MR. FRICKER: Yes.

10 MR. DUBUC: As of just two or three minutes ago,
11 counsel for plaintiff has produced a number of documents,
12 which apparently Dr. Busby has reviewed since his last
13 testimony, or reviewed recently.

14 DOUGLAS E. BUSBY

15 was called as a witness and, having been first duly sworn by
16 the Notary Public, was examined and testified as follows:

17 DIRECT EXAMINATION

18 BY MR. DUBUC:

19 Q Dr. Busby, counsel has presented a list of materials
20 reviewed for today's deposition. Are these the only documents
21 you have reviewed since your last testimony?

22 A Yes.

1 Q And that includes what is on this list, which I
2 will ask about, marked Busby's Exhibit 1.

3 [Document marked Busby's Exhibit No. 1
4 for identification]

5 BY MR. DUBUC:

6 Q There also is a document produced entitled, "Accident
7 Report," which I gather is Doctor Turner's report that you
8 reviewed; is that correct?

9 A From what I understand.

10 Q The marks in here in red are your marks as you
11 reviewed it?

12 A Yes.

13 MR. DUBUC: I will ask that that be marked Busby's
14 Exhibit 2.

15 Can we agree we will Xerox a copy of that, counsel,
16 and then have the marks made in ink so it will show up on the
17 Xerox because the red wouldn't?

18 MR. FRICKER: I have no problem with that.

19 MR. DUBUC: We will mark the one that has been
20 remarked so the markings will show up.

21 [Document marked Busby's Exhibit No. 2
22 for identification.]

MR. DUBUC: There is also a copy of Downes' Exhibit which contains ink marks. We will mark that Exhibit 3. We will have the same agreement on the red ink on that one.

[Document marked Busby's Exhibit No. 3
for identification.]

BY MR. DUBUC:

Q While we are at it, there is a copy of Doctor Downes' report you reviewed, which also has red marks. Are those your remarks, and some black marks?

A Yes.

MR. DUBUC: I will ask the same with respect to the red markings.

MR. FRICKER: I think if we look at all of them we will see they are basically typed reports. It may be easier to ask the witness if all handwritten markings are his.

MR. DUBUC: The red will not Xerox.

MR. FRICKER: It wouldn't show up at all.

MR. DUBUC: No.

MR. FRICKER: We would be happy to furnish you with copies.

BY MR. DUBUC.

Q You also reviewed a wreckage diagram which purports

1 to be something similar to the one prepared by Doctor Morain;
2 is that correct?

3 A That is correct.

4 MR. DUBUC: That will be marked Busby's Exhibit No.

5 5.

6 [Document marked Busby's Exhibit No. 5

7 for identification.]

8 BY MR. DUBUC:

9 Q Are those red marks on that report your exhibit
10 marks?

11 A No, that is the way it was handed to me.

12 Q With the red marks on it?

13 A Yes.

14 Q Were the changes in red?

15 A Yes.

16 Q So those are not your marks?

17 A Those are not my marks.

18 Q Have you also read a copy of John Edwards' report
19 which has some notations in there as well?

20 A Yes.

21 MR. DUBUC: We will mark that Busby's Exhibit 6.

22 [Document marked Busby's Exhibit No. 6

for identification.]

1 BY MR. DUBUC:

2 Q I gather you also reviewed Exhibit 1210, diagram
3 of the troop compartment with certain notations on it. Did
4 you review that?

5 A Yes.

6 Q Are there any marks on there which are yours?

7 A No.

8 MR. DUBUC: We will mark that Busby's Exhibit No. 7.

9 [Document marked Busby's Exhibit No. 7
10 for identification.]

11 BY MR. DUBUC:

12 Q You also reviewed a draft of the original wreckage
13 diagram which we marked Exhibit 5, which was also a part of
14 Doctor Morain's report; is that correct?

15 A Yes.

16 MR. DUBUC: We will mark that 5-A.

17 [Document marked Busby's Exhibit No. 5-A
18 for identification.]

19 MR. FRICKER: Let me make a two-sentence statement
20 for your clarification at the outset of the deposition.

21 Doctor Busby, for your information, is prepared to
22 testify today with respect to the opinions he expects to render

1 at the upcoming trials, to wit: to address with reasonable
2 medical certainty the hypoxic effects this crash has had on
3 the children generally or, conversely put, that the symptoms
4 of brain damage being seen in these children is the cause or
5 related to the crash. He is also prepared to express opinions
6 with respect to the approach taken by plaintiff's and
7 defendant's experts concerning the forces associated with the
8 crash. That is, he is not going to give testimony specifically
9 with regard to G forces but has reviewed, as an example,
10 Doctor Downes' and Doctor Turner's reports and is prepared to
11 express opinions presumably in rebuttal at trial as to the
12 approaches taken by those experts.

13 Is that a fair statement, Doctor?

14 THE DEPONENT: Yes.

15 MR. FRICKER: With that, please proceed, Mr. Dubuc.

16 BY MR. DUBUC:

17 Q Apropos your representation, Mr. Fricker, I under-
18 stand we are taking this deposition in all cases, is that
19 right, Kurth and Otto, and whatever is scheduled for trial?

20 MR. FRICKER: It is not clear to me. Certainly he
21 is being offered generally because he has not been asked to
22 testify with regard to a specific child based on review of

1 any child's records. In that sense, it is a general type
2 deposition as have been many others.

3 Maybe you did serve a formal notice and I don't
4 know whether you did or not or what cases you noticed it in.

5 MR. DUBUC: I have, for example, part of the Kurth
6 pretrial brief prepared by the plaintiffs indicating what
7 Doctor Busby is prepared to testify to in Kurth and it is the
8 same for Otto. Based on your representation I want to mark
9 this Busby's Exhibit No. 8 and I will ask him certain matters
10 for the record so we will be sure we understand your proffer.

11 [Document marked Busby's Exhibit No. 8
12 for identification.]

13 BY MR. DUBUC:

14 Q In the pretrial pleadings there is a summary of the
15 testimony of each of the experts and this happens to be yours.

16 One of the items you were proffered to give testi-
17 mony to was correlation with the medical findings for the
18 plaintiff for Kurth or Otto and other children aboard the
19 C5A.

20 Do you have an opinion as to that subject matter?

21 A Yes, sir.

22 Q As to the plaintiff Kurth?

1 A Not specifically to the plaintiffs.

2 Q Or the plaintiff Otto?

3 A No.

4 Q Or as to any specific plaintiff?

5 A Plaintiffs in general.

6 Q You have not reviewed the medical records or status
7 of any particular plaintiff?

8 A Not of the names you gave me, but as stated in
9 previous testimony, I have reviewed a number of medical docu-
10 ments related to certain of the plaintiffs. One that comes
11 to mind specifically is Schneider.

12 Q You did review Schneider, for example?

13 A I reviewed it in general terms.

14 Q How about Marchetti? Did you review Marchetti?

15 A The name is familiar to me. I may have glanced over
16 some medical information related to that.

17 A point of clarification, you will recall I attended
18 and participated in a scientific session with both the
19 plaintiffs and the defendants in this case about two-plus
20 years ago. At that time, I had an opportunity to be apprised
21 of a great deal of medical and scientific information.

22 Consequently, at that time, also I recalled that certain name

1 being familiar to me

2 Q I recall that.

3 You did testify in the Schneider case?

4 A Yes.

5 Q So my specific question for this purpose now is,
6 as I understand it, you have not reviewed nor are you prepared
7 to give an opinion specifically today as to the medical
8 condition of the plaintiff, either Carly Kurth or Tyson Otto?

9 A That is correct.

10 Q Other than the Schneider case in which you have
11 already testified, are you prepared today to give an opinion
12 as to the present medical condition and any causation on any
13 specific child?

14 A No.

15 Q You are also proffered to give an opinion and to
16 discuss the relationship between explosive decompression,
17 hypoxia, deceleration and impact and fume and smoke inhalation
18 and the development of brain injury in the C5A surviving
19 children.

20 Do you have an opinion as to that category of
21 information?

22 A Yes.

1 Q Each of them, including decompression?

2 A Yes.

3 Q Hypoxia, deceleration, impact, fume and smoke
4 inhalation?

5 A Yes.

6 Q Again, that is generally?

7 A Yes.

8 Q Not as to the plaintiff Carly Kurth or Tyson Otto
9 or any other specific plaintiff?

10 A No.

11 Q Another category you were proffered to give an
12 opinion on is the current findings in the surviving children
13 of the C5A accident are sufficiently explained by the acci-
14 dent environment. Is that generally or as to anything
15 specific?

16 A Generally.

17 Q Not as to any specific child?

18 A That is correct.

19 Q Another area you are proffered is that C5A accident
20 environment was sufficient to cause severe injury to multiple
21 systems of the human body.

22 Again, is that generally or as to any specific child?

1 A Generally.

2 Q You do have an opinion in that area?

3 A Yes.

4 Q You are also proffered and it is indicated you will
5 explain in detail the methods employed in the accident investi-
6 gations when correlations are required comparing the findings
7 of the survivors with the accident environment. Is that as
8 to any specific survivor or generally?

9 MR. FRICKER: I will object to the form.

10 You have not asked whether he has an opinion.

11 THE DEPONENT: Could I have that repeated, please?

12 BY MR. DUBUC:

13 Q You are proffered to give an opinion and the
14 question is, do you have an opinion to give us today as to
15 an explanation in detail of the methods employed in the
16 accident investigations when correlations are required com-
17 paring the findings of the survivors to the accident environ-
18 ment?

19 A I do not have an opinion today.

20 Q You are also proffered and I ask whether you have
21 an opinion today as to the method usually employed in the
22 evaluation of survivors of aircraft accidents to the extent

1 it precedes the correlation of such findings to the extent
2 environment and that following the evaluation of the survivors
3 of a severe accident or not one would then determine whether
4 a correlation exists between the accident and the medical
5 findings?

6 MR. FRICKER: Would it be helpful for you to read
7 what Mr. Dubuc is reading?

8 THE DEPONENT: Yes.

9 MR. FRICKER: I realize that was a long question.

10 MR. DUBUC: The question is, do you have an opinion
11 as to the sentence starting, "Doctor Busby is expected to
12 testify," and so on as I just read it, down through medical
13 findings. It is just under the one I marked where you don't
14 have any opinion.

15 THE DEPONENT: Yes.

16 BY MR. DUBUC:

17 Q And you are also proffered to give an opinion that
18 in your opinion the accident environment of the C5A starting
19 at the time of the explosive decompression and ending with
20 the impacts and crash of the C5A had sufficient physical and
21 biomechanical forces present to cause the current conditions
22 in the surviving children in the accident?

1 Do you have an opinion in that area?

2 A Yes.

3 Q Is that as to any specific child or in general?

4 A In general.

5 Q You are also proffered to give an opinion to
6 reasonable medical probability that the combination of the
7 factors we have just discussed could sufficiently explain
8 current findings in surviving plaintiffs. Is that a general
9 opinion?

10 A General opinion.

11 Q It is not as to any specific child?

12 A No.

13 MR. DUBUC: It is 2:10. I think we will have to
14 leave.

15 [Whereupon, the deposition was suspended at 2:10 to
16 reconvene at 3:30 of the same date.]

1 MR. DUBUC: It is now 3:30 p.m. We returned from
2 our court hearing and we are proceeding.

3 BY MR. DUCUB:

4 Q Doctor, referring to Busby's Exhibit 1, which is
5 the list of documents you reviewed in preparation for this
6 deposition, it is noted there you have also reviewed many
7 recently acquired photographs, particularly those in color
8 of the accident scene, wreckage and so on.

9 Do you know which ones those are by number or by
10 description?

11 A There were so many, sir, that I did not write down
12 any numbers except those of which I wished that a copy be made,
13 and there were approximately 25 of the colored photographs.

14 I was particularly interested in certain photo-
15 graphs in terms of the correlation of the accident environ-
16 ment as we now know it.

17 Q You say you did write down the number of 25 of
18 them?

19 A Approximately 25.

20 Q Where did you write those down?

21 A This was to request a copy be made for my future
22 reference.

1 Q You wrote those down yourself on a piece of paper?

2 A They were written down on a piece of paper and
3 provided to the law office.

4 MR. DUBUC: Do we have a copy of that description
5 by number that we can look at so we can get those pictures?

6 MR. FRICKER: No.

7 THE DEPONENT: I looked at all colored photographs
8 as well as, I would imagine, hundreds of black and white
9 photographs.

10 MR. DUBUC: I would like to request we get the
11 numbers he wrote down so we can save time.

12 MR. FRICKER: Do you want me to take a two-minute
13 break?

14 This is the first I heard such a list was prepared.
15 I would like to take a break for about 30 seconds to consult
16 with the witness and call my office to determine what is
17 involved.

18 MR. DUBUC: Maybe somebody could read it to you.
19 I would like to get the numbers so we can go ahead with the
20 deposition.

21 [A brief recess was taken.]

22 MR. FRICKER: Mr. Dubuc, let me tell you what we have

1 been able to determine.

2 We have had an individual in our office locate what
3 I gather to be a copy of this list that Doctor Busby prepared.
4 It was read over the phone to him with some questions, as you
5 will see, as to maybe what the numbers were. It is now on
6 a sheet of paper and you are welcome to mark this as a
7 deposition number. The numbers are neither deposition or
8 trial exhibit numbers. They are numbers that were recorded
9 by our photographer and the face of the prints that he
10 developed from the color negatives produced to us by Major
11 Traynor. There is no way today that we are going to be able
12 to tell you which numbers correspond to which prints. But,
13 apparently, the photos he reviewed were the Traynor prints.
14 You are certainly welcome to go through these. We will attempt
15 to translate these numbers into which trial exhibits they
16 reference.

17 MR. DUBUC: He only looked at Traynor prints? Is
18 that what you are saying?

19 MR. FRICKER: That is my translation of what he is
20 telling me.

21 BY MR. FRICKER:

22 Q Is it true you looked at a group of maybe some 65 or

1 so color prints, high clarity, which had a right border from
2 left to right and top and bottom but not run vertically?

3 A I believe these are the prints I looked at but
4 in addition I looked at a great many other prints, some of
5 which were in color now, the majority of which were black
6 and white.

7 MR. FRICKER: The first half of his response makes
8 it clear to me those he is referring to are the Traynor prints
9 and beyond that it would be difficult if not impossible to
10 identify them further.

11 MR. DUBUC: Obviously, this projects the time of
12 the deposition. I thought our arrangement was we would
13 mark for identification not actually everything that was
14 examined by the witness, but what he has listed in his Exhibit
15 1.

16 BY MR. DUBUC:

17 Q What of any significance in those prints did you
18 observe, Doctor?

19 MR. FRICKER: Objection.

20 Which prints now?

21 MR. DUBUC: The ones you just described he reviewed.

22 MR. FRICKER: The Traynor prints?

MR. DUBUC: Or the black and whites, since they are

1 not here. I want to know what, if any, significance he
2 observed.

3 MR. FRICKER: I object to it being overly broad.

4 But answer the question as best you can.

5 THE DEPONENT: Observations highlighted included the
6 topography of the accident, the various impacts that the air-
7 craft and its components made; the distribution of the wreck-
8 age, and the nature of the wreckage; the apparent distribution
9 of what appears to have been a fire in the area of the
10 aerostation of the troop compartment and, not specifically,
11 the final resting place of the troop compartment, particularly
12 in terms of it appearing to have abutted against a knoll.

13 BY MR. DUBUC:

14 Q Doctor, in your list of materials reviewed you
15 listed an accident report unsigned, undated. I believe that
16 was previously referred to as Doctor Turner's report; is
17 that correct?

18 A Yes.

19 Q Did you read that before or after you looked at the
20 pictures?

21 a After I looked at the pictures.

22 Q When did you receive Doctor Turner's report?

A Approximately a week and a half ago.

1 Q Did you also look at Doctor Morain's report?

2 A I don't believe so, sir.

3 Q You have not seen that?

4 A I saw it on a desk in which I was examining
5 materials but I do not specifically recall reading it.

6 Highlights of it were pointed out to me but apparently at
7 that time the report was only in a draft stage.

8 Q Pointed out to you when?

9 A Approximately one month ago.

10 Q Where was that?

11 A In the law offices of Lewis, Wilson.

12 Q Who was present?

13 A Doctor Cohen, Doctor Turner and an individual whose
14 name I do not recall.

15 Q Was he a lawyer or doctor or expert?

16 A I understand he was an engineer. I believe he was
17 an aerodynamist.

18 Q Was it Doctor Cromack?

19 A No, it was not. I know Doctor Cromack.

20 Q Was that the only meeting you have had to review
21 any of these materials since your testimony last June or
22 July?

1 MR. FRICKER: I will object to the form of the

2 question.

3 Do you mean any meeting or a formal conference?

4 MR. DUBUC: Any meeting to discuss the subject of
5 his testimony, formal or informal.

6 THE DEPONENT: Not specifically with respect to
7 this testimony, sir, but I was brought up to date on the
8 status of the case several months ago by Doctor Cohen in
9 a visit to the Cleveland Clinic.

10 BY MR. DUBUC:

11 Q Do you know when that was?

12 A I believe it was in the spring months.

13 Q Is that the only other meeting other than the one
14 you had about a month ago?

15 A Since my testimony at the hearing on June 15, 1980,
16 that is the only one that I recall.

17 Q When did you arrive in Washington on this trip?

18 A The present trip?

19 Q Yes.

20 A Approximately 11:40.

21 Q This morning?

22 A Yes, sir.

1 Q Did you have a meeting this morning with anyone
2 before coming here?

3 A Not specifically a meeting. I had a discussion
4 with Mr. Fricker with respect to the duration of the depo-
5 sition --

6 MR. FRICKER: I don't want you to say anything else.

7 The answer is yes.

8 BY MR. DUBUC:

9 Q Did Mr. Fricker prepare for you the list of
10 materials reviewed?

11 A I prepared the list. That is my writing.

12 Q You prepared that between the time you arrived
13 this morning at the commencement of the deposition?

14 A Yes.

15 Q You refer in those notes references to pressures and
16 partial pressures. Do you have those notes with you?

17 A No, sir.

18 Q Where are those notes?

19 A They are in my study at home.

20 Q When did you prepare those notes?

21 A Some years ago. Some of these notes go back to
22 the early '60s and represent my accumulated materials
relative to aviation-aerospace medicine.

1 Q You reviewed those in preparation for this depo-
2 sition?

3 A Elements of these notes.

4 Q Part of them you reviewed before you came here
5 today?

6 A I just glanced at them.

7 Q But they are on the list, Exhibit No. 1?

8 A Yes.

9 Q So you did review them before this deposition?

10 MR. FRICKER: Objection; asked and answered.

11 BY MR. DUBUC:

12 Q In part are you relying upon some of the information
13 in there in formulating your opinion?

14 A Yes.

15 MR. DUBUC: I would call for the production of
16 those notes if he is relying on them.

17 Are there copies?

18 BY MR. DUBUC:

19 Q Are these handwritten notes?

20 A Yes, sir, notes that relate to specifically lectures
21 I give. I would imagine that we may be talking about a
22 couple of filing boxes full.

1 MR. DUBUC: Then we have not seen them, Mr. Fricker.

2 I will state that for the record. He had one set of notes at
3 the trial of the Schneider case and those were typewritten.

4 MR. FRICKER: For the record, unless you wish to
5 explore it further, I am not at all satisfied that these notes
6 are anything other than general materials much like a general
7 reference library that any doctor or scientist would have
8 and I would not be inclined to ask that the Doctor produce
9 them based on what you have elicited thus far.

10 MR. DUBUC: That is your conclusion. He just stated
11 that he relied on them in part in formulating his opinions.
12 I would call for their production because I think we have a
13 right to cross examine him on whatever he is using.

14 I press my demand and it may or may not be that we
15 will be able to complete the deposition.

16 BY MR. DUBUC:

17 Q Doctor, do you have any other notes either with
18 you here in this room or with you physically in Washington
19 other than the eight exhibits we have previously marked?

20 A I have some cards.

21 MR. FRICKER: I object to the form. Notes on any-
22 thing or notes he is going to rely on?

1 MR. DUBUC: Relevant to this case.

2 BY MR. DUBUC:

3 Q Are those your notes?

4 A Yes.

5 Q Do they pertain to this case?

6 A Yes.

7 MR. DUBUC: I will call for the production of
8 those cards.

9 MR. FRICKER: Let the record reflect that the Doctor
10 has pulled from his pocket seven or eight three-by-five
11 cards which had writing on some of them and a couple of them
12 contain personal phone numbers and the like. I have reviewed
13 them with the Doctor and we have no trouble producing these
14 four which simply appear to be notes related to the documents
15 he has already reviewed and I produce them.

16 MR. DUBUC: He put some back in his pocket.

17 Are you representing those are personal notes?

18 MR. FRICKER: Yes, like a telephone number, which
19 has nothing to do with this litigation.

20 MR. DUBUC: How many did he put back in his pocket?

21 THE DEPONENT: Three. One is blank.

1 BY MR. DUBUC:

2 Q We will Xerox these and give them back to you,
3 Doctor.

4 Doctor, are you still at the Cleveland Clinic?

5 A No, I am not.

6 Q Where are you now?

7 A I am with the Lutheran Medical Center in Cleveland.

8 Q When did you leave Cleveland Clinic?

9 A November 20, 1981.

10 Q So I gather your resume as of the last time it was
11 marked and discussed is no longer current to that extent; is
12 that right?

13 A That is right.

14 Q Is there any other change in your resume?

15 I will hand you the last one we have.

16 A I have become a member of, I believe, three new
17 associations, appointed to chair a major committee of one
18 association.

19 Q Would you tell us which those are, please?

20 A The American Occupational Medical Association, the
21 Tri-State Occupational Medical Association, and the Cleveland
22 Academy of Medicine, and I believe my membership is active

1 at present in the Ohio State Medical Association.

2 I have been appointed to the chairmanship of the
3 Air Transport Committee of the Aerospace Medical Association.

4 I have also been appointed an associate professor
5 in the Northeast Ohio University College of Medicine.

6 I have also attended two management training pro-
7 grams sponsored by the American Group Practice Association.

8 I may have misstated the name of that association
9 but I believe I am fairly close to the association's name.

10 Q What was the reason you left Cleveland Clinic?

11 A I was given a unique opportunity to become the
12 director of a large facility that became available as the
13 result of the Reagan budget cuts, this facility being a
14 virtually new clinical and dental facility formerly used by
15 the U.S. Public Health Service as a regional clinic that
16 provided medical care to the government employees in the
17 Cleveland area. I had worked at the Cleveland Clinic to
18 develop such a facility and unfortunately higher priorities
19 restricted this and I was given this opportunity and took it.

20 Q When you say you worked to develop this at Cleveland,
21 I am not sure I understand the reference to budget cuts but
22 the budget cuts made it unfeasible?

1 A No. The budget cuts made some 26 U.S. Public Health
2 Service Clinics available to the public and Lutheran bid on
3 this facility and was one of the successful bidders across the
4 country, and this clinic became available to Lutheran on a
5 lease on the first of November.

6 Q So Lutheran is providing services previously pro-
7 vided by Public Health Service facilities?

8 A These are among the services being provided but this
9 is virtually available to the downtown working communities as
10 primarily an occupational health center.

11 Q What is your title?

12 A I am the medical director of the downtown health
13 services facility of Luterhan Medical Center. I am also
14 director of Lutheran Medical Center's Division of Occupational
15 Health.

16 Q What does that involve as far as your job at the
17 present time?

18 A I am responsible for the full administration of the
19 new facility.

20 Q Responsible for what?

21 A The full administration of the new facility as well
22 as the professional practice of clinical medicine in that

1 facility.

2 Q When you say professional practice of clinical

3 medicine, you are still engaged in the med practice?

4 A Yes.

5 Q What portion of your day is in the administrative

6 area as opposed to medical practice?

7 A This is unpredictable at this point but 50 percent

8 administration.

9 Q And 50 percent professional practice?

10 A Yes.

11 Q You mentioned being on the faculty, associate

12 professor of Northeast Ohio University College of Medicine.

13 Is that in Cleveland?

14 A It is in Rootstown, Ohio.

15 Q Are you teaching any formal classes there?

16 A Not at the present time.

17 Q What involvement do you have as an associate

18 professor at the present time?

19 A I have been a lecturer on the staff and at this time

20 in this semester I have served in an advisory role only.

21 Q You say you have been a lecturer on the staff. On

22 what subjects?

1 A Environmental health, including principally aero-
2 space medicine.

3 Q How many lectures have you given?

4 MR. FRICKER: Do you mean how many times he addressed
5 a class?

6 BY MR. DUBUC:

7 Q When did you receive that appointment as associate
8 professor?

9 A Approximately a year and a half ago.

10 Q Approximately how many lectures have you given?

11 I gather this is on a part-time basis.

12 A I have attended several meetings but I believe
13 only two formal lectures. Rootstown's program is a horizontal
14 teaching method in medicine and, consequently, it is princi-
15 pally a seminar program.

16 Q What were the lectures in? Do you remember the
17 subject matters?

18 A Aerospace medicine.

19 Q Any particular areas?

20 A One was human factors in aviation accidents and
21 accident injury correlation. The other was related to the
22 issue of age as the bona fide occupational requirement in

1 airline pilot qualification and retirement.

2 Q Is there an outline on the lectures you gave?

3 A No.

4 Q It is in the notes you reviewed?

5 A It is possible but I primarily use a slide set.

6 Q Where is that slide set located?

7 A In my home in my study.

8 Q That is on human factors in accident investigation?

9 A And crash injury correlation.

10 I also use a movie.

11 Q Did you review any of those notes or slides prior
12 to this deposition?

13 A No.

14 Q Have you drawn any information contained therein?

15 A It is difficult to answer this question because we
16 are dealing with general aspects of aerospace medicine as
17 physicians in areas similar to mine and must have basic
18 knowledge and in some cases applied knowledge based on our
19 past experience.

20 Consequently, when I am thinking back over what
21 questions might be asked in a deposition, it is quite possible
22 that I might think back to experience which some of these

1 slides depict.

2 For example, in one of my previous testimonies I
3 referred to the impact research that had been done at the
4 Civil Aeromedical Research Institute when I was branch chief
5 there regarding impacts conducted in testing the GM, Ford,
6 and Chrysler MoPar infant seats.

7 Q In your professional clinical practice to which
8 you say you devote 50 percent of your medicine, what kind of
9 medicine does that involve?

10 A At this time it is principally occupational medicine
11 although I am still very much involved in aerospace medicine
12 as a consultant to NASA, which quite possibly may have been
13 overlooked in going back over my CV as an examining physician
14 for pilots, as continuing to give aviation medical examiner
15 seminar lectures and other activities relating to my practice.
16 At this time it is 50 percent because I am developing a total
17 new program in a new facility.

18 Q When you say 50 percent, 50 percent is not all
19 aviation medicine, is it?

20 A No, it is not.

21 Q What portion of that 50 percent would you say is
22 aviation aerospace medicine now?

1 MR. FRICKER: We are talking at the last month
2 or so?

3 THE DEPONENT: I have only been in the job since
4 November 23rd.

5 BY MR. DUBUC:

6 Q I am trying to get an idea of the scope of your
7 activities and the activities of the Lutheran Medical Center.

8 A My activities have been virtually completely in
9 occupational health since coming on board. Since I have to
10 wait for the transfer of my medical examiner certificate
11 to the new clinic, I have not been examining pilots. More-
12 over, as I mentioned, our principal effort is to provide
13 occupational health services initially to assure that the
14 facility is able to function.

15 Q When you say occupational health services, what are
16 you referring to? Describe that briefly.

17 A Executive pre-employment program, impairments,
18 medical examinations, treatment of injuries and illnesses,
19 primary care.

20 Q When you refer to examining pilots, you are
21 referring to their annual or semiannual flight physical, which
22 is a type of annual physical examination, are you not?

1 A Yes, on a usual basis but I have already been
2 approached by a multinational corporation to handle its pilots
3 from the standpoint of a preventive medicine program and also
4 will be conducting certification exams along with their
5 certificate of health exams and those will be conducted on an
6 annual basis.

7 Q Which corporation is that?

8 A I would prefer not to state.

9 Q Is it an airline?

10 A In essence it is a corporation which has its own
11 airplanes.

12 Q It is not a commercial airline?

13 A No, it is not.

14 Q Doctor, you did review your CV and you mentioned the
15 additions you just put in the record. I looked through this
16 again and I noted that you have Director of Medical Services
17 for Continental Airlines from '68 to '71 and then you have
18 next in time -- it appears at least from the CV -- the next
19 occupation is consultant in aviation and occupational medicine
20 in Toronto, '72 to '74. Is that a typographical or is there
21 a certain period where something was omitted in there?

22 MR. FRICKER: Continuing on that page, Mr. Dubuc,

1 you will see there is reference to '71-2, '72-4 and above '74
2 to '75.

3 BY MR. DUBUC:

4 Q You went from Continental Airlines in Los Angeles
5 to consultant in aviation medicine in Los Angeles?

6 A And then in Toronto.

7 Q You were an individual consultant operating your own
8 consulting service or were you operating within a group?

9 A In Los Angeles I was associated with another
10 specialist in aerospace medicine, Doctor Leo Leonely, in
11 particular in developing aviation program for McCullough
12 International Airlines and serving as a human factors con-
13 sultant on the B-1 Bomber Program.

14 Q Then when you went to Toronto?

15 A I was a consultant in aviation medicine to the
16 Canadian Government, to Transair, based in Winnipeg, to the
17 Airline Pilots Association in Canada and other organization
18 and I was also involved in occupational medicine with the
19 Kodak firm and other small firms, including Canadian Limited.

20 Q What is the reason you left Continental Airlines?

21 A I left Continental Airlines for three reasons. The
22 first reason was primarily the opportunity to gain income and

1 diversify my interests.

2 The second reason was the dissatisfaction I had with
3 company policy, specifically the president's policy that no
4 worker, specifically mechanic, could return to work unless
5 completely fit after sustaining an industrial injury.

6 This, of course, limited my ability to return people
7 to light duty, of which there was plenty at that time.

8 The third was a professional problem that developed
9 regarding the company's return to work of a hostess who I
10 had grounded for sound medical reasons.

11 Q I am not sure I understand that. You grounded her
12 but the president had her come back?

13 A Yes.

14 Q Mr. Sichs.

15 A The decision to return her was apparently made in
16 a meeting which may have been attended by representatives of
17 Mr. Sichs and I believe Mr. Cotter was his representative
18 and Mr. Cotter is, I believe, or was at that time the chief
19 attorney but there were many other people present in the
20 meeting.

21 Q This was another policy disagreement?

22 A Yes.

1 Q Since your testimony last March or April in the
2 Schneider case, have you consulted on any other legal-medical
3 matters in connection with litigation and testified?

4 MR. FRICKER: I object to the form of the question.

5 Are you asking consulted and testified?

6 MR. DUBUC: I am principally interested in testi-
7 mony.

8 THE DEPONENT: I participated in Western Airlines'
9 case, Criswell, et al versus Western Airlines in District
10 Court at Los Angeles and also in Toronto in a tribunal hearing
11 as a consultant for Air Canada. I also served as an expert
12 witness in a case involving a crash of a small aircraft in
13 which high blood carbon monoxide levels were found.

14 BY MR. DUBUC:

15 Q Where was that case?

16 A It was in the South, in Birmingham, Alabama.

17 Q Was that a case in court?

18 A Yes.

19 Q You testified in court?

20 A Yes.

21 Q Do you remember the name of the plaintiff and
22 defendant?

1 A The defendant was Piper Aircraft Company.

2 Q Who did you testify on behalf of, the plaintiff or
3 the defendant?

4 A The plaintiff.

5 Q You don't remember the name of the plaintiff?

6 A I do not recall at this time.

7 Q Do you remember the name of the attorney who cross
8 examined you on behalf of Piper?

9 A There were three attorneys and I do not remember
10 their names at this time.

11 Q When was that?

12 A In the spring of this year.

13 Q In Toronto did you testify or consult on behalf
14 of Air Canada?

15 A Both testified and consulted.

16 Q What was that?

17 A This was a case of bona fide qualification for
18 pilot hiring.

19 Q It wasn't an accident?

20 A No accident was involved.

21 Q How about Criswell versus Western Airlines?

22 A For Western Airlines, both as a professional witness

1 and as a consultant, and in this case was a bona fide
2 occupational qualification of age for retirement specifically
3 as related to pilots being able to bid down from captain to
4 flight engineer and proceed beyond age 60.

5 Q Any other cases where you consulted or testified?

6 MR. FRICKER: I will object to the form of the
7 question.

8 MR. DUBUC: Mainly in which he has testified.

9 MR. FRICKER: And since his testimony in Schneider?

10 MR. DUBUC: Yes.

11 THE DEPONENT: I have been called by a number of
12 organizations.

13 MR. FRICKER: The question, Doctor Busby, is whether
14 you consulted and testified since Schneider.

15 THE DEPONENT: No.

16 BY MR. DUBUC:

17 Q When I say testified, I am talking about court or
18 deposition.

19 A I do not know whether or not my deposition given in
20 the Ford Motor Company bona fide occupational qualification
21 case was before or after the Schneider case. Consequently,
22 I did not mean to directly withhold that information.

1 Q That is Ford Motor Company. That was on an
2 occupational question again?

3 A This was a bona fide occupational qualification
4 for pilot retirement, age 60, for Ford Motor Company.

5 Q We never had an opportunity to take your deposition
6 prior to the Schneider case.

7 Have you consulted and testified either at depo-
8 sition or in trial in connection with any other airplane
9 accident cases that you can recall?

10 A No.

11 Q Can you recall any other cases where you testified
12 at deposition or in trial between the Schneider case and the
13 present time?

14 MR. FRICKER: I think the record should reflect I
15 don't know what the witness' recollection is like but you and
16 I both know about --

17 MR. DUBUC: Put in your objection.

18 MR. FRICKER: -- the injunction hearing.

19 MR. DUBUC: Other than the injunction hearing.

20 THE DEPONENT: I do not recall at the present time.

21 BY MR. DUBUC:

22 Q With respect to this case, I just want to be sure

1 I understand this. I understand you may be giving an opinion
2 generally on G forces and impact forces but not in specific
3 detail; is that correct?

4 A That is correct.

5 Q You mentioned a meeting where Doctor Turner was
6 present. Have you ever had a meeting or discussion with
7 Doctor Morain?

8 A No.

9 Q Have you conferred with Doctor Turner other than
10 at that one meeting?

11 A No.

12 Q Have you conferred or seen Doctor Cromack's report?

13 A No.

14 Q How about Mr. Carroll? Have you conferred with him
15 or seen his report, John Carroll?

16 MR. FRICKER: I object. I don't believe Mr. Carroll
17 has issued a report.

18 BY MR. DUBUC:

19 Q Then have you seen his testimony or notes?

20 A I have never heard the name before.

21 Q You have never heard the name?

22 A No.

1 Q Mr. Carroll testified in his opinion this is a non-
2 survivable accident. Do you agree or disagree with that?

3 MR. FRICKER: I object to that.

4 The witness may not be in a position to do either.

5 BY MR. DUBUC:

6 Q Do you know what the term nonsurvivable accident
7 refers to?

8 A Yes.

9 Q Assuming John Carroll, an expert witness for the
10 plaintiffs, testified after reviewing some of this data that
11 the C5A accident was a nonsurvivable accident, would you
12 agree or disagree with that conclusion?

13 MR. FRICKER: Objection.

14 It suggests he has an opinion with respect to that
15 matter. I would further object because the witness has not
16 been afforded an opportunity to review the many bases that
17 Mr. Carroll stated for rendering that opinion.

18 You may answer the question, Doctor.

19 THE DEPONENT: This is a survivable accident by
20 virtue of what transpired in the accident.

21 When one uses the term survivable and nonsurvivable,
22 at least in the medical sense, maybe not the accident

1 investigators' sense or the aerodynamic engineers' sense but
2 the sense of very many other experts in various areas related
3 to aircraft accidents, survivable accident might be classified
4 as the one that occurred at Tenerife with a caveat that is
5 placed that if the fire had not occurred, it would have been
6 survivable.

7 Q You are referring to the Tenerife accident?

8 A Yes.

9 Another good example is the PanAm accident at
10 Pago Pago. There were survivors but a great many deaths.

11 On the other hand, due to the fire that broke out
12 and the incapacitating byproducts of that fire, the vast
13 majority of people in that crash were killed.

14 It is a relative term, then.

15 Q As I understand your statement, based on the
16 circumstances, this was a survivable accident; is that
17 correct?

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

19 You are using a term which Mr. Carroll used in one
20 context. You are asking this man whether he agrees in that
21 context. His answer clearly discloses he is talking in a
22 totally different context than that which you and I know

1 Mr. Carroll used. I think this entire line of question is
2 objectionable, misleading and I reserve the right to strike,
3 and nonprofessional.

4 MR. DUBUC: I disagree with you, particularly as to
5 it being unprofessional. I disagree with you.

6 You can answer the question.

7 MR. FIRCKER: Would you read the question, Mr.
8 Reporter.

9 [The reporter read the pending question.]

10 THE DEPONENT: I will repeat my answer again.

11 When one has a great many deaths, let us say
12 virtually all people are dead, or, for example, a shoulder
13 harness fails in an agricultural aircraft when it should not
14 have failed, we would say that is a survivable accident.

15 But the caveat is put there. If there had not been a fire
16 to kill everyone, namely, flame retardant, namely a bomb on
17 board, or a failure of the shoulder harness, it would have
18 been called a survivable accident.

19 If a individual crashes into a mountain side, a
20 surface of the mountain, obviously it is not a survivable
21 accident so, consequently, it depends as to whether or not one
22 is putting in a caveat in terms of determining whether or not

1 if there was appropriate protection for the individual and
2 that protection worked, we now use the term survivable acci-
3 dent. Basically, it is a one-direction use of terminology,
4 at least in my experience.

1 BY MR. DUBUC:

2 Q In connection with this accident you just referred
3 to built-in protection at work.

4 What would you be referring to in connection with this
5 accident in that context?

6 A It appears by nature of the disintegration of
7 the aircraft that a section of the aircraft was rendered
8 uniquely capable of providing sufficient protection for
9 its inhabitants to have led to a significant number of
10 survivors, whereas the rest of the aircraft was destroyed.
11 I should say two sections, the forward section and the
aft troop compartment.

12 Q The aft troop compartment where the surviving
13 children were and the forward section being the cockpit
14 area?

15 A Yes, the cockpit area.

16 Q Doctor, I believe from these things that were
17 produced today and in connection with what you reviewed --
18 I believe this is your original copy and this is the copy
19 that was marked -- you did have occasion to review Doctor
20 Goun's report and Mr. Edwards' report and Doctor Goun's
21 report; is that correct?

22 A Yes.

1 Q Did you have occasion to review Doctor Turnbow's
2 report, James Turnbow?

3 A The name I do not recall.

4 Q You have not seen that before?

5 A I do not believe so.

6 Q Do you know Doctor Turnbow at Arizona?

7 A No, I have not seen that report.

8 Q Do you know Doctor Turnbow?

9 A The name is vaguely familiar. I believe it is
10 a name that I obtained for Doctor Cohen some months ago
11 when he was searching for experts in the crash injury area,
12 and I believe he was recommended. I, in turn, recommended
13 him.

14 Q By reputation and not by personal knowledge. Is
15 that how you did it?

16 A The name is coming back to me as being a crash
17 injury specialist from the operation out in, I believe,
18 Phoenix.

19 Q Do you know him to be such an expert either pro-
20 fessionally or from some source?

21 A Yes.

22 Q Did you have an opportunity to review Doctor

1 Gibbons' recent reports?

2 A No, I haven't.

3 Q Have you had an opportunity to review Doctor Jeff
4 Davis' and Gerard Dunn's recent reports?

5 A No.

6 Q You know Doctor Davis and Doctor Dunn?

7 A Yes. I am looking forward to reviewing their
8 reports.

9 Q But you have not done so to date?

10 A No.

11 Q Have you had an opportunity to review Doctor
12 Charles Berry's report?

13 A No.

14 Q Do you know Doctor Charles Berry?

15 A Yes.

16 Q He is present president of the Aeromedical Asso-
17 ciation?

18 A No, he is past president.

19 Q That is Jeff Dunn?

20 A No, Stanley White.

21 Q He is the president-elect?

22 A That is right.

1 Q Jeff Davis is the president-elect?

2 A That is right.

3 Q Have you had an opportunity to see any one of
4 the movies of the accident scene?

5 A Yes.

6 Q Do you recall which one?

7 A There was a short one and a long one. That is
8 all I can remember.

9 Q When did you review that?

10 A Approximately three or four weeks ago.

11 Q That was at the other meeting?

12 A Yes.

13 Q Approximately how many times did you review the
14 films?

15 A The small film, at least four times; the long
16 film, twice.

17 Q Was anything of significance in either of those
18 films that you recall and upon which you base any portion
19 of your opinions?

20 A As stated previously before I had seen the films,
21 I was given the opportunity to reconfirm in my mind the
22 topography, the site of the crash, the distribution of the

1 wreckage and so on.

2 Q Anything in particular or just generally?

3 A I saw some things that represented some remarkable
4 inconsistencies from previous trials.

5 Q Which ones were those?

6 A For example, I had been told that the floor of
7 the cargo compartment was really the picture that eventually
8 was shown as part of the forward compartment. I was also
9 told there were no pictures taken at the site and yet one
10 of the movies showed pictures being taken.

11 I was also particularly interested, since there had
12 been a report, I believe, by some of the survivors, that
13 there had been heat, ashes, the smell of something burning,
14 that there had been, indeed, fire in the surrounding area
15 of the troop compartment, and that this had produced in
16 what appeared to me to be in the films and pictures to be
17 some scorching of the troop compartment.

18 Q Anything else? Any other inconsistency?

19 A I had been told that the troop compartment had
20 come to a gradual standstill and it appeared to me from
21 both the stills and the film that it had, indeed, arrested
22 against the what appeared to be a small hill or a

1 knoll, so giving an indication of an abrupt stop.

2 Q Did you make that analysis as to the difference
3 in topography and knoll, yourself, from the pictures or
4 did you rely in portion or in part on either Doctor Turner's
5 excerpts from Doctor Morain in his report?

6 A There was a general discussion of what is presumed
7 to have occurred in the accident with reference to this
8 present Exhibit 5 principally, in essence a reconstruction
9 of the events that we have assumed occurred from presently
10 available evidence, including calculated impact forces,
11 distances traveled, conclusions drawn.

12 I believe the name Morain was mentioned in the report.
13 If I remember correctly, he is a geologist or trained expert,
14 and in particular it was pointed out to me how the various
15 dikes or areas of elevated terrain are constructed and
16 what the significance of water-filled areas is where a large
17 object is tracked through and disrupted the ground, pene-
18 trated the ground.

19 Basically, that is what I recall from our meeting.

20 This meeting was very general only and was more or
21 less only to apprise me of what we presently knew about
22 the accident environment to let me have an opportunity to

1 correlate some of the thoughts that I had presented in
2 previous testimony and meetings and, furthermore, to give
3 me an opportunity to see the films and pictures.

4 Q You mentioned somebody pointed out to you the
5 dikes and the standing water and the distances. Who was
6 that?

7 A I believe the main briefer was Doctor Turner,
8 although the other gentlemen in the room did speak to this
9 and I also asked questions related to the interpretation
10 of what I felt these various elements on the pictures and
11 film represented.

12 Q I think you told us Doctor Cohen was present,
13 Doctor Turner and some engineer?

14 A Doctor Turner was present but most of the time
15 he was out doing other things and really participated mini-
16 mally in the discussions that we had.

17 Q Did you, yourself, at any time or have you at
18 any time looked at the pictures or the movie or any charts
19 or other available documentary evidence made any measurements
20 of distances, yourself?

21 A Yes, with the other unnamed gentleman, the two
22 of us had a ruler and I was going back over to verify some

1 of these distances that are diagrams on my Exhibit 5.

2 Q So, you used Exhibit 5 --

3 A And I believe another exhibit or another chart
4 which was in the law office, but I understand it was a
5 foregoing chart that was used for diagramming these elements
6 out.

7 Q Are you referring to what has been marked as
8 D-9?

9 A It looks vaguely familiar, yes.

10 Q When you say you were measuring distances, you
11 were measuring something on D-5 or something that looks
12 like D-9?

13 A Yes. The gentleman was sitting on my left and
14 I would say "let me see this and let me understand what
15 you are interpreting here so I am convinced these measure-
16 ments are within the realm of reason."

17 Q Maybe I had better rephrase my question.

18 Did you make any analysis, yourself, of distances
19 based upon photographic evidence?

20 A No.

21 Q Did you rely upon whatever distances and repre-
22 sentation of wreckage and parts were on either exhibit D-9

1 or Busby Exhibit 5, the Doctor Morain chart? You relied
2 on distances, one or the other.

3 A I used the distances. At the present time, I
4 feel I am confident these distances represented on Exhibit
5 5 more realistically represent distances previously cal-
6 culated by virtue of the availability of visual evidence
7 now of what the surrounding terrain and the actual crash
8 site looked like.

9 Q I notice on the copy of Busby Exhibit 5, which
10 we are using here and, just for the record so we can have
11 a cross reference, this does appear to be the same as the
12 chart marked at Doctor Morain's deposition. In fact, it
13 was marked Liu Exhibit No. 10, as well.

14 Those distances in that chart were not done by you?

15 A No, but I made some comparisons with a ruler.

16 Q I notice on Busby Exhibit 5, which we have marked
17 today, there are some changed numbers in the right-hand box
18 at the bottom. Do you see that?

19 A Yes.

20 Q Were those changes on there when you first looked
21 at it or did those occur during the course of your discus-
22 sions?

1 Q Those were present when I first looked at the
2 drawing.

3 Q Have you made any efforts to verify whether the
4 initial number as represented on the exhibit, for example,
5 900 changed to 405, whether that is the original or second-
6 ary number, was the correct number?

7 MR. FRICKER: I will have to object for the record
8 because the Xerox of Busby 5, I don't read that clearly.

9 MR. DUBUC: You have the original of Busby 5.
10 I gave it back to you.

11 THE DEPONENT: I believe that is --

12 MR. FRICKER: Just a moment. I may be wrong but
13 it looks to me in the legend portion under Item (c) "Dis-
14 tance with no discernible track," the original number ap-
15 pears to be 900 or 960 feet, which I can't read, and the
16 red pen marking is 400 and the diagonal mark standing for
17 feet.

18 The basis of my objection is the possibility that var-
19 ious people might read that handwritten number differently.

20 MR. DUBUC: That is not my question. My question
21 is whether he was in on the change of the numbers.

22 THE DEPONENT: No, although I did verify to a

1 degree using a ruler.

2 BY MR. DUBUC:

3 Q Were you told that the distances and representa-
4 tions on Exhibit 5, Doctor Morain's chart which appears,
5 also, as part of Doctor Turner's report -- were you told
6 as to the method by which the measurements were made by
7 Doctor Morain?

8 A Not specifically the method. I did ask how they
9 were made and I was told they were made through a sophisti-
10 cated technique that topographers use, if I am using the
11 correct term.

12 Q Do you have any experience or skill in doing that,
13 yourself?

14 A No, I don't.

15 Q So you would have to rely upon their methodology
16 and conclusions?

17 A Basically, yes.

18 Q To the extent they are correct, you viewed them
19 in formulating the opinions you present hold; is that
20 correct?

21 A That is correct.

22 Q To the extent that any of these might be wrong,
23 would that affect your opinion?

1 MR. FRICKER: Wrong in a material sense? How

2 long?

3 BY MR. DUBUC:

4 Q We were talking about distance with no discernible
5 track, 900 or 960 feet with a new number in red of 405
6 feet.

7 I assume for purposes of this question that it was
8 determined that there was a discernible continuous track.
9 Would that affect your opinion?

10 A No.

11 Q It would not?

12 A No.

13 Q Do the opinions you hold to any extent depend
14 on any of the computations made by Doctor Turner in his
15 report as to length of slide of various components and G
16 forces?

17 A They verify or support my previously-held opinion
18 that there were one or more significant jolts in this
19 accident.

20 Q You describe them as jolts?

21 A I used that term in the out-of-jury-hearing in
22 the Schneider case.

1 Q So what you are telling us is that, in your opinion,
2 Doctor Turner's report and calculations support your prior
3 opinion?

4 A Absolutely.

5 Q Regardless of whether or not that track is inter-
6 rupted, your opinion remains the same?

7 A That is correct.

8 Q You mentioned a hill or something, a slight rise,
9 previously today. Did you discern that, yourself, from
10 pictures or did you rely upon either Doctor Morain's or
11 Doctor Turner's conclusions to that effect?

12 A As I mentioned earlier, Doctor Turner and the
13 other gentleman in the room briefed me on what was known
14 of the accident scene and the changes from previously-held
15 views. Toward the end of describing what is considered
16 the series of events in the accident, it was pointed out
17 to me that the aft troop compartment came to rest against
18 an elevated area.

19 Q That was pointed out to you?

20 A That is correct.

21 Q Did you make any independent determination, your-
22 self?

1 A I believe I replied I can hardly wait to see the
2 pictures.

3 Q You have seen the pictures now. Did you rely
4 upon what you were told or did you discern it from your
5 own observations?

6 A I discerned it from my own observations.

7 Q How did you go about that?

8 A I repeated and carefully examined the frames in
9 both movies and in light of what I had read previously of
10 the statements made of survivors of the crash who were
11 adults, along with the nature of the injuries that occurred
12 and the damage that occurred, specifically the tearing out
13 of the seats and the abrupt ending of the slide, that this
14 confirmed what I had suspected, that a terminal jolt had
15 occurred.

16 Q In examining the pictures as you just stated you
17 did, did you use any equipment or did you use the naked
18 eye with glasses?

19 A The naked eye with glasses.

20 Q You mentioned seats tearing out. What information
21 do you have as to which seats were tearing out?

22 A I was told that the forward-facing seats sheared

1 their aft pins. I also recall from one of the statements
2 made by a witness that there were other seats disrupted.

3 In light of the data you presented to me in the Schneider
4 testimony in an average of, I believe 1.6 G, and in light
5 of the stress that these seats are required to withstand
6 by milspec, as I mentioned in the post-Schneider trial
7 hearing with Judge Oberdorfer and yourself, I believe that
8 there was a jolt somewhere along the line, probably terminal,
9 that led to the disruption of sufficient force, that is
10 peak G, to have resulted in the shearing of the pins.

11 Moreover, I recall that the witnesses also described
12 the disarray in the aft troop compartment, overheads having
13 fallen down, even a child who had apparently been separated
14 from a seat, I believe, and a woman thrown in the cabin
15 against the forward bulkhead, and a variety of other injuries
16 which implied greater than the 1.6 G average deceleration.

17 Q You mentioned some injury patterns and you just
18 mention one woman being thrown. What other information
19 have you reviewed as far as injuries?

20 A As I said earlier, I have only reviewed that which
21 is pertinent to our present discussion but from what I
22 recall of the Collateral Report, a description of an

1 individual with fractured lower extremities and I believe
2 a fractured skull, and I believe this was a military man
3 who was a Sergeant and, if I recall, he never regained
4 consciousness and died several days later in the hospital.

5 Q Any others that you recall?

6 A One individual I believe had a fractured clavicle.
7 That may have been a nurse or adult person who had some
8 difficulty carrying the children out of the wreckage. And
9 another had fractured ribs, I believe.

10 Q Have you reviewed any medical information on any
11 of the occupants of the troop compartment, other than
12 Schneider?

13 A Other than Schneider, not in detail other than
14 what I was able to learn during the scientific session some-
15 time ago.

16 Q You are talking about in March of 1980?

17 A Yes.

18 Q Have you ever reviewed any document which has
19 been termed as a composite of troop compartment injuries?

20 MR. FRICKER: If you recall, Doctor?

21 THE DEPONENT: I don't believe so, although I
22 have asked for it as recently as three weeks ago.

1 BY MR. DUBUC:

2 Q As of today, you have not seen it?

3 A No. It is on a list of things I have requested.

4 Q Is that list in writing?

5 A I don't believe so --

6 Q How did you make the request?

7 A -- unless Doctor Cohen took notes. I don't know.

8 It was a list made over the phone.

9 Q Do you recall anything else you asked to review
10 other than a composite of troop compartment injuries?

11 A I told them that I would like to see Doctor Mason's
12 report at some time and the Morain report and the Gibbons'
13 report, anything further from Gibbons.

14 That is all I recall at this time.

15 Q Perhaps we can back up here for a moment.

16 We reviewed earlier today the proffered testimony that
17 you were going to give and you told us you had opinions
18 in certain areas and a couple of things you said you had
19 not, and that was on Busby Exhibit No. 8 which I think
20 you had an opportunity to review while we were down at the
21 courthouse.

22 I wonder if we can take Busby Exhibit No. 8 and start

1 maybe at the beginning.

2 First of all --

3 MR. FRICKER: Since it appears you are now
4 changing your line of questioning, wouldn't this be an
5 appropriate time to take a five-minute break because I
6 don't want to interrupt once you get into another line of
7 questioning.

8 (Whereupon, a brief recess was taken.)

9 BY MR. DUBUC: Referring to Exhibit 8, one of
10 the items you were going to discuss was the relationship
11 or the effect of explosive decompression; is that correct?

12 A Yes.

13 Q What is your opinion as to the effect of explosive
14 decompression on these children?

15 A The decompression led to hypoxia. It could have
16 also had other effects.

17 Q In your opinion, under the circumstances of this
18 accident, would any of these children have suffered from
19 what is termed decompression sickness?

20 A No.

21 Q In your opinion, would any of these children have
22 suffered from altitude sickness or what is sometimes referred

1 to as bends in the reverse?

2 A You just asked that question.

3 Q In your opinion, at these altitudes at the times
4 involved, would any of the children have suffered any
5 embolism as a result of decompression?

6 A It is remotely possible.

7 Q You say remotely. Why do you qualify it?

8 A It is possible that a child seated, restrained
9 and subjected to the decompression while the glottis is
10 closed to have reached a sufficient trans-thoracic pressure
11 to have led to air emboli entering the circulatory system.

12 Q When you say the glottis closed, you mean the
13 throat in some way closed?

14 A Yes, the swallowing mechanism.

15 Q With the exception of someone swallowing at the
16 moment of decompression, would anyone have sustained an
17 embolism?

18 A It is possible but I would consider it unlikely.

19 Q You have indicated that the decompression led
20 to the hypoxia. What is the distinction you make between
21 the two?

22 A The decompression is decreasing ambient atmospheric

1 pressure, oxygen is present in the atmosphere, the pressure
2 of oxygen decreases, the decrease in oxygen has an effect
3 on the body known as hypoxia.

4 Q Is time a factor in hypoxia at increased altitude
5 and reduced oxygen?

6 A Yes, among other factors.

7 Q With respect to hypoxia, I believe you previously
8 testified as to a certain theory or opinion on reduced
9 CO₂ pressures; is that correct?

10 A Yes.

11 Q Can you tell us how you arrived at that theory?

12 A I made certain assumptions and used the alveolar
13 gas equation to apply those assumptions.

14 Q What assumptions did you make, say, applying to
15 the occupants in the troop compartment of the C5A?

16 A The basic assumption was that the partial pressure
17 of carbon dioxide in the alveoli and consequently in the
18 arterial system was in the range of 40 millimeters of
19 mercury; that the respiratory gas ratio was at a level of
20 approximately .83; and that the cabin decompressed to an
21 altitude, I believe, of 23,400 feet.

22 Q What assumption did you make as to the cabin

1 altitude pressure prior to decompression?

2 A That assumption basically did not have to be made
3 in this type of calculation. However, having knowledge
4 of the cabin pressure prior to decompression, one might
5 have to alter assumptions made on the basis of the partial
6 pressure of carbon dioxide.

7 Q What figure did you use previously?

8 A I mentioned 40. That is in the awake child. In
9 the sleeping child or adult it could possibly be higher.

10 Q Is that tracheal CO₂?

11 A Alveolar CO₂.

12 Q The presence of CO₂ is trachea?

13 A CO₂ is throughout the airways but for the CO₂
14 in the blood we have to consider the alveolar CO₂.

15 Q You mentioned, I believe in your prior testimony,
16 a figure of 46 for CO₂. Have you modified that?

17 MR. FRICKER: Do you recall that prior testimony?

18 THE DEPONENT: No, I don't.

19 MR. FRICKER: I have a copy of the transcript
20 here.

21 MR. DUBUC: I am trying to see if he remembers
22 it.

1 THE DEPONENT: I don't remember it unless placed
2 in context.

3 BY MR. DUBUC:

4 Q Based on those assumptions, what application,
5 using the formula previously mentioned, did you utilize
6 to confirm or support your opinion of hypoxia level for
7 these children?

8 A Would you repeat that?

9 Q Using the assumptions you just told us, there
10 is a formula for converting pressure at a given altitude
11 to compensate and adjust for CO₂ and other factors; is that
12 correct?

13 A That is correct. That is why I asked the question
14 be repeated because I believe what you are asking me is,
15 Is there a formula for calculating using the assumptions
16 I made, the partial pressure of alveolar oxygen. Yes,
17 there is. It is called the alveolar gas equation.

18 Q What does that consist of?

19 A It consists of the incorporation of elements of
20 partial pressure and concentration and R, which is respiratory
21 exchange ratio.

22 Q Are you able to tell me what that computes to

1 for 23,400 feet?

2 A It computes, using these assumptions, to something
3 in the range of 15 plus or minus millimeters of mercury.
4 I would have to recompute it because the last time I
5 recomputed it was in March of 1980.

6 Q How long would it take you to do that?

7 A I imagine a few minutes.

8 Q I would like to have you do that, if you could,
9 because I would like to mark the computation. Just put
10 it on this sheet and we can date it.

11 A You will have to give me altitude charts.

12 Q Do you need altitude charts?

13 A Just a moment now.

14 Q Would the ones in Randall be sufficient?

15 A No, I want the standard atmosphere charts that
16 I used.

17 Q Do you mean to get the beginning partial pressure
18 of mercury at 23,400 feet? Is that what you are after?

19 A I have to calculate PILD is FIL two times the
20 pressure.

21 Q If we assume for purposes of your computation
22 that 23,400 feet the partial pressure is 303, would that

1 get you started?

2 A I would like to see it first, using the national
3 standard.

4 Q How about if we take your prior testimony? Would
5 that do it?

6 MR. FRICKER: Let's look at the prior testimony,
7 Mr. Dubuc.

8 BY MR. DUBUC:

9 Q If you look at page 333 et seq. I think that is
10 where you did it. You started it there, anyway. That gave
11 you the number. I guess you used 335.

12 I guess at page 3375, if you want to look at it, you
13 talked about the same thing. I am not sure where that
14 figure came from.

15 I guess what my real question is, how you got the
16 figures 23,424 and 56 millimeters of mercury.

17 A I am sorry? Where I got what?

18 MR. FRICKER: Fifty-six millimeters of mercury,
19 as you were quoted at page 3375 of the Schneider transcript.

20 Mr. Dubuc, I don't know. I think I have to object
21 for the record because you are asking this witness, I gather,
22 where he got the figure of 56 millimeters of mercury.

1 MR. DUBUC: That is correct.

2 MR. FRICKER: If that is the sole question, having

3 reviewed the Schneider, yes, I think he can answer that

4 question.

5 Can you answer that question, Doctor?

6 THE DEPONENT: Yes, 56 is the combination, the

7 addition of carbon dioxide and the partial pressure of

8 oxygen as calculated.

9 BY MR. DUBUC:

10 Q That is the calculation we are talking about?

11 A Yes.

12 Q What is it that you need to make the calculation?

13 A Basically what we are talking about is an indi-
14 vidual increasing tolerance to altitude is hyperventilation,
15 blowing off carbon dixode and so increasing relatively
16 the partial pressure of oxygen in the blood and so oxygen
17 to the tissues.

18 Q I understand that. I am trying to find out what
19 you need to make the computation.

20 Q First of all, I need the altitude figure.

21 Q 23,400 feet is the altitude figure. 23,400 is
22 the actual number. What else do you need?

1 A I don't believe I need anything else except a
2 calculator.

3 I come out to approximately 9.

4 Q Nine millimeters of mercury?

5 A Assuming a PACO₂ of 40 and an R of .83.

6 Q What is the R again?

7 A I am sorry. Just le me go through this again.

8 Q R is the expiration gas ratio?

9 A Yes.

10 Perhaps to verify my accuracy, I could use a calculator.

11 MR. FRICKER: For the record, I object in a dis-
12 covery deposition to asking the witness to perform calcula-
13 tions. I think that he had come with the calculations or
14 had prepared them for the purposes of this deposition;
15 being asked to do so at trial would be one thing but to
16 simply ask him to go back and explain some testimony he
17 gave a year-and-a-half ago to do calculations, I think,
18 is inappropriate.

19 THE DEPONENT: May I have reference to the prev-
20 ious testimony?

21 MR. DUBUC: Page 3375. The previous one, I
22 think, is 3331, 24,000 feet and you used 303.

Am I correct that the starting point is 303 for this calculation?

THE DEPONENT: I will accept your figure.

BY MR. DUBUC:

Q That is the one you used. It is at page 3331 of your testimony in Schneider. You started with a figure of 303 millimeters of mercury for the pressure inside the cabin.

Here is the calculator.

A It comes out to 7.2. There may be some rounding off numbers here. It may round up to 8.

MR. DUBUC: Let me mark that as Busby Exhibit

THE DEPONENT: Can I write it out again?

BY MR. DUBUC:

Q Sure, if you want to write it out on another piece of paper.

A Do you want me to certify it?

Q Just put your name and the date on it.

MR. FRICKER: Doctor, if he wants you to do something, rest assured he will ask you to do it.

(Said document marked Busby Exhibit

9 and DD-2546, respectively, for identification.)

BY MR. DUBUC:

Q Is the 303 the partial pressure of air at 23,400 feet?

A Total pressure of air is what you gave me.

Q That is the beginning figure; is that correct?

MR. FRICKER: Objection, asked and answered.

THE DEPONENT: Yes.

BY MR. DUBUC:

0 Then you have a figure of 47. What is that?

A That is a partial pressure in the lounges at 37 degrees Centigrade.

0 Does that refer to the tracheal moisture?

A Yes.

Q. Does your computation -- I see there is another number on there where you have subtracted another 40.

First you multiplied by 2045.

MR. FRICKER: Is that a 9 or 4?

BY MR. DUBUG:

Q Is that the percentage of oxygen of the total air?

1 A Yes.

2 Q Then you subtracted 40, which I think you previously
3 told us is the carbon dioxide factor; is that correct?

4 A Yes.

5 Q Having done that and applying your formula as
6 you have set forth on Exhibit 9, you have come up with a
7 figure of 53.6 as the partial pressure of oxygen minus the
8 40 for the CO₂, is that correct?

9 A That is correct.

10 Q Giving a total of -- that comes to 13.6 and then
11 you have another subtraction. Can you tell us what that
12 is?

13 A I don't see a 13.6.

14 Q You have the formula 53.6 minus the 40 times 1.16.
15 What is the 1.16 factor applied to 40?

16 A 1.16 is the dilutional factor that relates to
17 calculations that must be made in the presence of nitrogen
18 in the air. If this were simply just an oxy-breathing
19 atmosphere you subtract the 40 but you have to take into
20 account the presence of nitrogen and at that point relate
21 to the respiratory exchange ratio.

22 Q Making that correction, you come up with a 7.2

1 millimeters of mercury as a partial pressure of oxygen in
2 alveolar of the people in the troop compartment? Is that
3 roughly what this computation shows?

4 A Making these assumptions that I previously gave
5 you, yes.

6 Q In your opinion, would all of the individuals
7 in the troop compartment at the time of decompression have
8 7.3 millimeters of mercury?

9 MR. FRICKER: Objection, if previously stated
10 in Schneider.

11 THE DEPONENT: I was assuming the worst possible
12 condition that would immediately follow decompression.

13 Except for the caveat which I mentioned just before
14 the area that I highlighted on page 3331 that, if infants
15 were sleeping and possibly adults, too, I might add, the
16 carbon dioxide partial pressure could actually have been
17 higher than 40 at the moment of decompression. Consequently,
18 it represents a still worse situation.

19 BY MR. DUBUC:

20 Q In formulating your opinion, I think you mention
21 this on page 3332 and over to the next 3333 -- you mention
22 the possibility of some individuals compensating for increased

1 rate of breathing. That is sometimes called hyperventilation,
2 involuntary hyperventilation under these circumstances?

3 A In broad terms, yes.

4 Q In your opinion, would the occupants of the troop
5 compartment have ventilated involuntarily?

6 A To some degree, yes, sir.

7 Q Would that have any effect on the 7.7 millimeters
8 that you have in your computation?

9 MR. FRICKER: Correction, 7.2.

10 THE DEPONENT: It could.

11 BY MR. DUBUC:

12 Q Is there any way to quantify that?

13 A No.

14 Q Is there any accepted assumption in the aero-
15 space medical field for quantifying that?

16 A Some individuals have used data provided by Luft
17 in Randall's aerospace medicine, as well as data provided
18 by Doctor John Ernstein in a Gillies textbook of aerospace
19 medicine.

20 My view with respect to that is that data was obtained
21 on individuals who were not acutely exposed to altitude
22 but rather individuals who were allowed to adapt to altitude

1 and given a sufficient time to blow off their carbon dioxide
2 store and reduce their partial pressure of carbon dioxide
3 and so protect themselves.

4 Q In your opinion, you would not use any hyperventila-
5 tion factor adjustment; is that correct?

6 A In the worst possible situation where we are
7 talking about .3 of a second of decompression to altitude,
8 I would initially not use it. Subsequently, there is no
9 data available to indicate how much compensation could occur
10 particularly possibly even in a still-sleeping infant.

11 Q In your opinion, how long would that level that
12 you have computed, the 7.2 millimeters of mercury, persist
13 in an occupant in the troop compartment of this airplane
14 under the circumstances of this accident where the airplane
15 started a descent shortly after decompression?

16 A Physiologically, this has never been determined.

17 Q Do you have any opinion on that?

18 A No, not at this time.

19 Q Would you agree that level of 7.2 millimeters
20 of mercury would not persist for any appreciable time if
21 the aircraft was descending after the decompression as it
22 occurred in this case?

1 A I would agree.

2 Q What, in your opinion, is the unconscious of
3 millimeters of mercury for the human being?

4 A It is usually determined below 30 millimeters
5 of mercury.

6 Q So, in your opinion, assuming the worst case as
7 you have described it on Busby Exhibit 9 and Exhibit
8 DD-2546, taking that worst case without supplemental oxygen,
9 would all occupants of the troop compartment be unconscious
10 at that level of millimeters per mercury?

11 A Again, it is a time-level phenomenon and depending
12 on voluntary and involuntary hyperventilation, the avail-
13 ability of oxygen, one cannot draw a conclusion on that.

14 Q Is that the only compensating factor that would
15 be considered?

16 A Several other compensating factors and also ag-
17 gravating factors would have to be considered.

18 Q What would be the compensating factors?

19 A Availability of oxygen, pre-existing disease
20 such as anemia.

21 Q Compensating? Which ones are the compensating
22 factors?

1 A Principally oxygen; younger age has been proposed
2 as a possible compensating factor up to, let us say, given
3 a certain age given a group of infants.

4 Q In other words, the younger, possibly the better
5 compensating?

6 A Let's say they were infants in the first six weeks
7 of life on board, we know that infants still possess fetal
8 hemoglobin and they are less likely to experience severe
9 hypoxic effects. I believe that may not apply in a situation
10 such as this.

11 Q Is younger age also a factor with respect to com-
12 paring, say, 5-year-olds or, say, 15-year-olds with 40-
13 year-olds --

14 MR. FRICKER: I object to the form of the question.

15 BY MR. DUBUC:

16 Q -- from the standpoint of use, usually, less obesity,
17 less arteriosclerosis of the system, better elasticity of
18 arteries, veins and so on?

19 A Not necessarily.

20 Q What other compensating factors would be effective,
21 in your opinion?

22 A As I mentioned previously, asleep or awake.

1 Q What is the distinction there?

2 A As I mentioned previously, we know that individuals
3 asleep usually have a higher partial pressure of arterial
4 carbon dioxide.

5 Q So, in other words, they start with a higher
6 partial pressure in their lungs before the decompression?

7 A Yes.

8 Q Therefore, are you talking about residual oxygen
9 at a higher partial pressure at the time of decompression?
10 Is that what you are referring to? I am just trying to
11 understand it.

12 A It is basically less oranges in the bottle than
13 lemons, considering the lemons being the carbon dioxide
14 infringes on the oranges.

15 Q The carbon dioxide level is lower in sleep?

16 A No, higher in sleep

17 Q What other compensating factors, if any, in your
18 opinion?

19 A I see none immediately.

20 Q You mentioned decompensating factors. Which ones
21 would those be? You already mentioned oxygen and possible
22 illness.

1 A Anemia. An area that has not been considered
2 to any significant degree that might be pertinent to this
3 case is the presence of hyperthermy, increased body pressure
4 which may be quite significant.

5 Q Your opinion in that regard --

6 A In general terms, obesity may assist in decom-
7 pensating, age may assist in decompensating, the use of
8 certain medications, sulfonamides being an example.

9 Q In your opinion, was hyperthermia a factor in
10 this case?

11 A How would one know?

12 Q As decompensating factors you have mentioned
13 hyperthermia. What is the assumption and theory of hyper-
14 thermia being a decompensating factor?

15 A Fever is known to increase the body's demand for
16 oxygen quite significantly. I forget the rule of thumb.
17 But metabolism doubles for only a moderate increase in body
18 temperature. It was stated in the Collateral Report by
19 one or more witnesses that it was extremely hot that day
20 and it took a long time to get the children, so-called
21 bundled into their seats. If I recall some of the pictures
22 that faced me when I was giving testimony, these children

1 were, indeed, quite bundled. An infant has a great diffi-
2 culty getting rid of its body heat if not adequately exposed
3 to the environment and particularly a lower-temperatured
4 environment. It is a matter of its volume versus its
5 area of surface exposed to the environment. This is the
6 reason why it is difficult to cool down infants as compared
7 to small children.

8 Consequently, I believe it could be quite possible
9 that hyperthermia existed to a significant degree in these
10 infants.

11 Q In your opinion, was there any change in the temper-
12 ature in the troop compartment as part of the aircraft when
13 the door left the aircraft at 23,400 feet and the decom-
14 pression occurred?

15 A There would have been a significant temperature
16 change.

17 Q In your opinion, would that have been higher or
18 lower?

19 A Lower.

20 Q In your opinion, would there have been any temper-
21 ature changes as the aircraft climbed from ground level
22 to 23,400 feet?

1 Q With the aircraft's power units on and air-
2 conditioning in use, the aircraft would have cooled down,
3 I would imagine, close to normal room temperature.

4 Q Do you remember how long it took the aircraft
5 to reach 23,400 feet?

6 A No.

7 Q Would that be a factor in determining whether
8 or not there might have been hyperthermia in any given case?

9 A Only if a prolonged climb and the infants were
10 exposed for a relatively long period of time to decreased
11 environmental pressure. It takes an infant quite a while
12 to cool down when the difference between the skin and the
13 environmental air rather than, let's say, water or alcohol
14 is used in cooling infants, occur.

15 Q What degree of hyperthermia, in your opinion,
16 might have possibly been present?

17 MR. FRICKER: Do you have an opinion why?

18 THE DEPONENT: I do not have an opinion on that
19 at the present time but from personal experience it could
20 have been over possibly 100 degrees and possibly signifi-
21 cantly so.

1 BY MR. DUBUC:

2 Q That would be approximately 1.4 or possibly 1½
3 degrees above normal temperature?

4 A Or higher.

5 Q How much higher? Do you have any range?

6 A I cannot render an opinion on that.

7 Q Is there any correlation in the aerospace medical
8 knowledge or within your own knowledge between body temper-
9 ature by degree and effects of hyperthermia, as far as
10 hypoxia is concerned?

11 A Significant information is in the anesthesia
12 literature which I have not researched to date. I do not
13 recall any specific data in the area of aerospace medicine
14 because one usually does not do research on individuals
15 who may be ill as a result of infections and consequently
16 have an elevated temperature.

17 Q Am I correct in our discussion thus far that if you
18 have hyperthermia or increased body temperature you are
19 more subject to hypoxia and if your body temperature is
20 lower you would be significantly less susceptible?

21 A Cooling down may produce shivering or increased
22 muscle temperature and this increases metabolic demand for

1 oxygen.

2 Q I am trying to find out whether, in your opinion,

3 we are talking about possible additional susceptibility

4 to hypoxia because of a higher body or lower body temperature

5 in this case.

6 A Higher body temperature -- hyperthermia.

7 Q If this fact the temperature was such so that body

8 temperature was maintained at about 98.6 degrees or what-

9 ever the normal might be for an individual, then hyperthermia

10 would not be a factor; is that correct?

11 A If maintained in the range of normal body temper-

12 ature, then we don't have hyperthermia.

13 Q Or hypothermia?

14 A Right.

15 Q So there is no particular effect if body temper-

16 ature is maintained for any normal given individual; is

17 that correct?

18 A That is correct.

19 Q I gather your assumption in your computation is

20 that infants would not involuntarily ventilate; is that

21 correct?

22 A It depends on the context in which you are asking

1 the question.

2 Q It is in the context of the decompression of this
3 accident.

4 MR. FRICKER: I object to the form of the question.

5 Do you understand? Are you having difficulty in
6 responding to his question as phrased, Doctor?

7 MR. DUBUC: It is not a question of whether he has
8 difficulty in responding. It is only whether he understands
9 it.

10 THE DEPONENT: There would be a hypoxia-induced
11 ventilation to some degree as a result of a change in alti-
12 tude. How quickly it would occur and to what effect it would
13 have in lowering the partial pressure of alveolar and so on,
14 arterial blood, carbon dioxide, I cannot state.

15 Q Do you know whether infants have a higher or
16 lower or the same resting PO_2 than adults?

17 A I cannot answer that at this time.

18 Q Do you know whether in human beings exposed to
19 a decompression and a subsequent potentially hypoxic situation
20 there is any factor in the aerospace medical field pertain-
21 ing to an existing store of oxygen in the lungs, a residual
22 store, if you will?

1 A I don't recall there being a storage place for
2 oxygen anywhere except perhaps in some tissues which are
3 poorly perfused.

4 Q To your knowledge, is there a decreased radiant
5 as far as oxygen exchange at higher altitudes?

6 A Which gradient?

7 Q The gradient connected with the alkylosis shift?

8 A I don't believe it is usually referred to as an
9 alkylosis shift.

10 MR. DUBUC: Maybe my terminology is wrong.

11 MR. FRICKER: Then I would object to the question.

12 THE DEPONENT: There is an increased gradient
13 overall.

14 BY MR. DUBUC:

15 Q Would that factor be considered in your calcula-
16 tions or is it a compensating factor?

17 A It is a compensating factor.

18 Q Am I correct it is not in that computation?

19 A It is not.

20 Q Would it be quantifiable?

21 A It has been theoretically present and theoretically
22 quantified.

1 Q Is there a decompensating factor connected with
2 the status of a human being in a potentially hypoxic situa-
3 tion whether or not they are active or exercising versus
4 one who is resting and not active?

5 A Yes.

6 Q If they are resting and not active, under accepted
7 theories it would be experienced more slowly?

8 A The effects would not be felt as soon. In other
9 words, activity renders an individual more susceptible to
10 hypoxia.

11 Q I asked you previously about time.

12 In your opinion, how long in your worst case scenario
13 in Busby Exhibit 9 would that have persisted under the
14 circumstances of this accident where there was a descent
15 after the decompression?

16 A I do not know.

17 Q You are familiar with the term, I believe from
18 your last testimony, "time of useful consciousness"?

19 A Yes.

20 Q That is a term, is it not, that is used in con-
21 nection with people, usually crew members who are working
22 and can be useful during a certain period of hypoxia?

1 A No.

2 Q How would you define it?

3 A I will correct the assumption. These individuals
4 are not usually working. In fact, all of the research
5 except for my research and I believe some done at the School
6 of Aerospace Medicine reported a few years ago has been on
7 supposedly physically inactive crew members and experimental
8 subjects.

9 Q Does not the term "time of useful consciousness"
10 connote a time during which the individual can function as op-
11 posed to being conscious without being able to function
12 normally?

13 A It depends again on what you are using to define
14 useful consciousness. The broad term is the time after
15 decompression during which an individual would be expected
16 to be able to save himself to get oxygen.

17 Q To take some self-saving action; is that correct?

18 A That is correct.

19 Q Is there also a time period in a hypoxic con-
20 sideration where time of useful consciousness would expire
21 and there could be a time of consciousness but perhaps the
22 individual would no longer be able to take that kind of

1 action?

2 A It depends on the criteria that you are using to
3 assess useful consciousness.

4 As I mentioned earlier in trial testimony, if one is
5 yelling at me through the head-phone set "Don your oxygen
6 mask," I believe I referred to an air traffic controller.
7 That is quite different from letting me sit there and letting
8 me slowly go to sleep. I may go to sleep as you have stated
9 just without recognizing that I have gone asleep, so there
10 is no definable useful consciousness.

11 Q When you go to sleep, as you just described it,
12 would that sleep, in your opinion, be described as un-
13 consciousness or sleep?

14 MR. FRICKER: I object to the form.

15 THE DEPONENT: I guess we could spend the next hour
16 discussing what we term unconsciousness. There are several
17 stages.

18 BY MR. DUBUC:

19 Q How do you define unconsciousness?

20 A It is a very broad term that, to me, applies to
21 an individual who is essentially unresponsive to stimuli.

22 Q Would there be any distinction between that and

1 sleep?

2 A If one was asleep, one might be responsive to

3 stimuli.

4 Q So there would be a distinction?

5 A Yes.

6 Q Would it be fair, as you have just described it,
7 you could have somebody go to sleep and there would be a
8 certain period of time in potentially a hypoxic situation
9 where they were asleep and still responsive to stimuli before
10 they reached whatever the term might be described as un-
11 conscious and unresponsive to stimuli?

12 A It is possible.

13 Q When we talk about unconsciousness in terms of
14 response to stimuli, are you aware and familiar with a term
15 used in the aerospace medical field as "time of safe un-
16 consciousness"?

17 A I am familiar with the term.

18 Q Do you subscribe to that term as the theories
19 behind it?

20 A I agree with the term and I have referred to it,
21 myself, in lectures.

22 Q And in a book, as well, have you not?

1 A I don't believe I used time of safe unconsciousness

2 in a book. I edited a book in which Doctor Gaume published
3 a paper.

4 I stated previously the use of this concept to justify

5 the removal of oxygen systems use from commercial aircraft.

6 Q What was the basis for your statement that you

7 could remove oxygen systems from commercial aircraft?

8 A I do not recall at this time. My rationale for

9 it -- one reason would be the wide variability of individuals
10 susceptible to hypoxia, particularly when you consider the
11 age and health range of the flying public.

12 Q Do I understand correctly from what you just told

13 me, you at one time recommended the removal of oxygen systems
14 from commercial airplanes?

15 A Absolutely not.

16 Q Then I misunderstood you.

17 A Doctor Gomm presented an interesting concept to
18 airline director colleagues of mine who were very interested
19 in it.

20 Q You disagreed with them?

21 A I thought that the concept was certainly interest-
22 ing. It appeared plausible. I did not go back and look at

1 the data which had been used to generate the concept and
2 the curves that he presented. However, I could not ration-
3 alize its use in justifying the total removal of oxygen
4 systems used for passenger use in the event of decompression
5 and hypoxia.

6 Q Is there a time of safe unconsciousness before there
7 is any damage to the brain or other parts of the body?

8 MR. FRICKER: I object to the form of such a
9 question. Does he have such an opinion one way or the other.

10 THE DEPONENT: Yes.

11 BY MR. DUBUC:

12 Q In your opinion, what is that period?

13 MR. FRICKER: I object to the form of the question.
14 It is overly broad.

15 THE DEPONENT: That period is not determinable in
16 terms of a specific time.

17 BY MR. DUBUC:

18 Q Have you ever stated in words or writing that it
19 is approximately four minutes?

20 A I believe so.

21 Q Would that be a fair estimate of the general
22 parameters of that time period, safe unconsciousness, four

1 minutes?

2 A No.

3 Q Why would that not be the case?

4 A The four-minute period that is used for exposure
5 to oxygen lack is a rule of thumb for such exposures as
6 cardiac arrest, hypoxic events as cardiac arrest and exposure
7 to extreme hypoxia as I described might occur in an astro-
8 naut's spacesuit or spacecraft decompression.

9 This implies that the individual will have a high likeli-
10 hood of entering a vegetative state with severe brain damage
11 and never be able to return, basically, to a significant
12 level of mental and cognitive functioning.

13 Moreover, as I have previously stated in testimony,
14 repeatedly so, we have no idea at the present time how this
15 applies to an infant who is still in the process of develop-
16 ing the neural elements necessary for an efficient brain
17 function in adult life.

18 Q You have read Doctor Downes' report, have you not?

19 A Yes.

20 Q Do you disagree with it?

21 A I disagree with his calculations.

22 Q What do you disagree with in Doctor Downes' report?

1 A The partial pressures of CO₂, as I previously
2 mentioned, were taken from Luft chapter in Randall's aero-
3 space medicine. That data was derived not in acute, short-
4 term decompressions. It assumed it in an essentially
5 adapted state.

6 Q You don't disagree with Luft?

7 A No. He was making observations.

8 Q Did you not work with or for Doctor Luft?

9 A I worked with him. I was a colleague.

10 Q I have Busby Exhibit 3 in front of me which is a
11 copy of Doctor Downes' reports with your notations on it.

12 Could you tell me what those notations say? On the
13 first page, is that a note or something -- you say "Check
14 this with Cohen." What does that mean?

15 A I was wondering where the figures of 10 grams
16 per deciliter and 50 to 60 millimeters of mercury came
17 from.

18 The reason why I intended to check this with Doctor
19 Cohen was to see if it had been previously stated in writing
20 anywhere and if he had any reference to these figures.
21 Moreover recognizing Doctor Cohen is a fellow physician
22 knowledgeable in this area as well, I felt that I would

1 confer with him as a colleague.

2 Q Did you do that?

3 A No, not yet.

4 Q Do you intend to?

5 A Definitely.

6 Q Do you intend to rely upon what he tells you?

7 MR. FRICKER: I am going to object. I think
8 that is speculative. Since there has not been the discussion,
9 there is no way this witness could answer that.

10 BY MR. DUBUC:

11 Q If Doctor Cohen tells you something different,
12 would you rely on that?

13 MR. FRICKER: I object again. It is still calling
14 for speculation.

15 BY MR. DUBUC:

16 Q You can answer.

17 A Not necessarily.

18 Q Do you intend to check that, yourself?

19 A I don't know where I can obtain data on these
20 infants as far as their level of hemoglobin concentration
21 is concerned, because you will recall we went through this
22 in the Schneider testimony in great detail as to the minimum

1 amount of medical information available on these infants.

2 To make a flat assumption of 10 grams and the fact that the
3 children were somewhat anemic naturally I am going to find
4 out if this data is available on these children that I
5 have not been apprised of.

6 Q On page 2, you have reference in the margin. What
7 does that mean?

8 A When I write "reference" in the margin, when this
9 respected physician is using references in his report,
10 this would be such a key element. This partially-discussed
11 partial carbon dioxide in the lungs is a significant factor
12 in susceptibility to hypoxia and, consequently, I would
13 expect him to provide a reference that would not only
14 determine how carbon dioxide reduces with altitude but also
15 how he gets a figure of 35 millimeters of mercury which he
16 states there.

17 Q Then you have O₂-something.

18 A O₂ cascade. That is what you were referring to
19 in terms of gradient. He was describing the O₂ cascade.

20 Q What does your note imply? Something you were
21 going to check?

22 A Yes.

1 Q You are going to check that, too?

2 A I don't know where I am going to be able to obtain
3 the methodology unless somebody provides me the references
4 that he used. So much depends on pH of the blood and other
5 factors.

6 Q You have a note on the left side of page 2 of
7 Dr. Downes' report encircled, "33 mmHg." and then "where
8 get this figure?"

9 A The same reference at the top.

10 Q Below that you have another words which I can't read.

11 A "Assumes PACO_2 35 mmHg at sea level."

12 Q What does this note mean to you?

13 A It means that he is using a figure at 5,000 feet
14 before decompression or on return to sea level or near sea
15 level of 35.

16 Q Is that something you are going to check or is
17 that just a note to yourself?

18 MR. FRICKER: I object to the form of the question.
19 It may be something else.

20 THE DEPONENT: When I wrote that in, I didn't know
21 where to check it because where are we going to have data
22 on infants exposed to altitude?

1 BY MR. DUBUC:

2 Q At the bottom of the page on the right, the
3 next-to-the-last paragraph, "but need greater blood flo,
4 not a mech for excess protection."

5 What does that mean to you?

6 A The increased blood flow in infants may not neces-
7 sarily be a mechanism for giving them any more protection as
8 compared relatively to adults.

9 My reaction to reading that, and that is why I am
10 writing in the margin, Is the question that the brain of an
11 infant needs more oxygen to begin with than an adult. It
12 is metabolizing, it is developing, it is laying down
13 various neuro-connections and neuro-sheaths and, consequently,
14 one would expect that it needed greater blood flow.

15 Q Is that note for you to check it?

16 A Yes, absolutely.

17 Q And you are going to check that?

18 A I might.

19 Q On the last page of Doctor Downes' report, the
20 signature page, opposite the first paragraph there you
21 have another note, "But didn't happen, maintain seated
22 crash."

1 What does that mean?

2 A Hypoxic infants that this distinguished physician
3 deals with are not seated in an aircraft all bunched up
4 two to a seat with pillows surrounding them, possibly not
5 hyperthermic and certainly not treated in the same way
6 particularly in terms of lying them down and they certainly
7 have not had an explosive decompression exposure with its
8 potentially attendant reflex tachycardia or decreased heart
9 rate.

10 Q So that is your opinion or is that something
11 you are going to check?

12 A No, it is what we always say you can't extrapolate
13 from one experience to another.

14 Q I guess you misunderstood my question.

15 My question is, how do you know he had not dealt
16 with infants in different conditions?

17 A In decompression.

18 Q Or in circumstances where the PO2's are directly
19 comparable to PA2.

20 MR. FRICKER: I object to the form of the question.

21 THE DEPONENT: I don't specifically know.

22 MR. DUBUC: That is an assumption.

1 THE DEPONENT: It is an assumption.

2 BY MR. DUBUC:

3 Q Another note, "does not address sleeping." What
4 is the import of that?

5 A We have already discussed that several times -- the
6 rise of P02 with sleep.

7 Q Then on his calculation page table, you have a
8 note, "This is an adopted data line." What does that mean?

9 A Adopted from Luft.

10 Q You have, "Get reference" opposite another one.

11 A I would like to see how that relates to this
12 reference number 2 by Levison, et al. I do not recall that
13 being presented.

14 Q What is the reference to Levison?

15 A It is a reference behind infant and child. I do
16 recall that appearing in any references that I have read
17 previously and possibly it may not be related to the aviation
18 environment. So, consequently, I want to look at it.

19 Q On the next handwritten page there is another
20 note, "Adopted levels," and you have 40 and 35 circled.
21 What does that mean?

22 A It is the same reason -- adopted from somebody else,

1 namely Luft.

2 Q At this point, you have several things you want
3 to check as far as Doctor Downes' report is concerned?

4 A Yes.

5 Q Am I correct that you disagree with him at the
6 present time?

7 A No, I have questions.

8 Q If your questions are answered affirmatively and
9 to your satisfaction, Doctor Downes' presentation in this
10 report, Exhibit 3 to your deposition, would that have any
11 effect on your opinion relative to hypoxia?

12 MR. FRICKER: I object to the form of the question.

13 THE DEPONENT: It would be extremely difficult to
14 prove Doctor Downes' figures as I previously mentioned. He
15 is using adapted data and there is no basis for extrapolating
16 that data which was taken on individuals exposed for relatively
17 long periods of time to altitude to an infant exposed to
18 altitude in .3 of a second. So I doubt that I will ever be
19 able to take his report and prove or disprove it except
20 on the basis that there are questions that I have raised
21 from this report and others that I have read related to this
22 case with respect to the severity of hypoxic insult.

1 BY MR. DUBUC:

2 Q What symptoms would you expect to see in the
3 occupants of the troop compartment who were exposed to the
4 hypoxic insult you have indicated in your prior answers?

5 MR. FRICKER: Are you distinguishing between adult
6 and infant?

7 MR. DUBUC: No. Take them collectively, if you
8 want to, or any way you want to.

9 THE DEPONENT: There is a whole range of symptoms
10 described.

11 BY MR. DUBUC:

12 Q Which would you expect to see in the occupants of
13 the troop compartment in this C5A as a result of your review
14 of the facts and your opinion? What would be the symptoms
15 be?

16 A Loss of coordination, inability to perform purpose-
17 ful acts, loss of consciousness.

18 Q Would these be symptoms you would expect to see
19 while the aircraft was still in the air?

20 A It is possible.

21 Q What symptoms would you expect to see in the
22 occupants of the troop compartment of this C5A under your

1 hypothesis as a result of this hypoxia after the airplane
2 came to rest in the next hour or two after the airplane came
3 to a rest?

4 A I guess it would be best described as silence.

5 Q Anything else?

6 Lassitude.

7 Q Anything else?

8 A Perhaps some whimpering but not much movement,
9 perhaps inability to maintain continence, perhaps purpose-
10 less or repetitive movements; in other words, a lower scale
11 of brain stem activity.

12 Q Anything else?

13 A There might be the possibility of a seizure or
14 seizure activity.

15 Q That is within the two-hour period?

16 A I understood it to be a few hours.

17 Q Anything else?

18 A Again, you do not have any data -- speculative
19 only -- on which to base an opinion such as this except for
20 the fact that an individual has had an extreme brain insult
21 would be expected to behave this way.

22 Q What symptoms would you expect to see two or three

1 days afterwards if they had had a severe insult with some
2 brain stem damage?

3 A Virtually a continuation of these symptoms,
4 particularly in infants as seen in automobile accidents, and
5 so on -- some retardation in development; generalized
6 tendency towards, as I said, lassitude, flaccidity.

7 Q You would see retardation and development in the
8 next few days?

9 A A continuation of really a setting back in
10 development to a degree but also certain symptoms and signs
11 might appear if carefully looked for that this child was less
12 than adequately developing.

13 Q What area of the brain is affected by the kind of
14 hypoxic insult that you have been describing in your opinion
15 would occur as a result of this?

16 A The most susceptible area is the basal ganglia,
17 but depending on the type of insult and the degree of insult,
18 the entire brain could be involved to some degree.

19 Q We are talking about the kind of insult related
20 to this particular accident.

21 A A combination of factors, correct.

22 Q Using the circumstances of this accident, what areas

1 would you expect an effect to be seen?

2 A I believe we are talking about a diffuse phenomenon
3 possibly highlighting the more basal areas of the brain but
4 principally diffuse.

5 Q Mechanically is there any way you can describe
6 that in terms of what area is affected as the result of the
7 circumstances?

8 MR. FRICKER: I object to the form -- as a result
9 of the circumstances?

10 He has already indicated it is principally diffuse.

11 THE DEPONENT: I am unable to give an opinion on
12 that.

13 BY MR. DUBUC:

14 Q With respect to the landing or impact forces
15 themselves, you said you had examined Doctor Turner's report;
16 is that correct?

17 A Yes.

18 Q In his report, I believe he talks in terms of G
19 forces on pages 4 and 5. Do you see that? It says,
20 "Accident Report."

21 MR. FRICKER: I am having trouble finding a copy.

22 MR. DUBUC: It is in his original papers.

MR. FRICKER: It has not been returned, Mr. Dubuc.

1 Let's just go off the record for a moment.

2 [Off-the-record discussion.]

3 MR. FRICKER: On the record.

4 We have it now, Mr. Dubuc.

5 BY MR. DUBUC:

6 Q Do you see pages 4 and 5?

7 A Yes.

8 Q On page 5, he specifically addresses the troop
9 compartment. Do you see that?

10 A Yes.

11 Q He estimates the average estimated horizontal
12 G force range to be between 7 and 14 G's. Do you agree with
13 him on that, or haven't you come to a conclusion as to numbers?

14 A Based on the distance traveled and the assumed
15 velocity at the beginning of the distance, it seemed reason-
16 able to me based on calculations I was making in the office
17 but in terms of actually reanalyzing it, I have not done that
18 to date.

19 Q He also has at the point of impact as he suggested
20 at the hill we talked about earlier a range of 280 to 440
21 G's. Do you see that? Do you agree with that?

22 A Again, it seemed plausible based on the information

1 that he gave to me and I at this time have neither refuted it
2 nor accepted it.

3 Q You have not done either?

4 A It seems plausible that such a high peak G could
5 have occurred.

6 Q Let's take adults to horizontal G forces, do you
7 have an opinion?

8 A Peak or average or jolts or what?

9 Q Take peak G forces.

10 A Not without reference to literature. Doctor
11 Stafhouse, as you know, has survived very high G forces
12 sustained in the forward direction. These children were in
13 the rear-facing direction, and consequently there really is
14 not any significant data that I know of being available to
15 which you could extrapolate the rebound effect which
16 undoubtedly occurred in this case, that is the cushion
17 rebounding and the child being thrown over the seat belt.

18 Q Do you have any information that any children
19 were thrown over a seat belt?

20 A By thrown over, I mean flexed over.

21 Q You don't mean thrown over and out?

22 A Not necessarily.

1 Q Let's direct it to adults. You referred to some
2 date you wanted to look at. What would that date be?

3 A I would like to look at a NASA astronautic data
4 book, specifically the most recent version. Someone provided
5 the former version in these reports. They are referring to
6 it, and I would like to look at the newer version which
7 summarizes data that was available in the '70s, up to the
8 '70s.

9 Q The newer version was available in the '70s?

10 A Up to the '70s.

11 Q The '70s would be the last one?

12 A I believe so.

13 Q I may be misunderstanding you. I just want to find
14 out what you want to look at. Bioastronautic data book
15 published sometime in the '70s?

16 A I believe so, either that or the late '60s.

17 Q Would that be the bioastronautic data book published
18 in 1973 by NASA in Washington?

19 A I believe so.

20 Q There is a chapter here by Richard Schneider on
21 impact. Is that what you are referring to?

22 A I have not looked it up yet, sir. It is in my

1 library at home.

2 Q Is this the one we are talking about?

3 MR. FIRCKER: If you can determine.

4 Are you representing what you have shown to the
5 witness a complete copy of the boook?

6 MR. DUBUC: Just the chapter and starting at page
7 227 it has a chapter on human tolerance limits.

8 THE DEPONENT: I believe this is the book I have
9 on my shelf, sir.

10 BY MR. DUBUC:

11 Q With reference to this -- let's take adults. Do
12 you have an opinion on peak G forces --

13 A I would like to read it as I mentioned earlier.

14 MR. FRICKER: I am going to object to this witness
15 being asked or having it suggested to him that we ought to
16 take the time and it is now approximately 20 minutes of 7
17 for him to review something he has not reviewed apparently.

18 MR. DUBUC: He said he has it in his library. If
19 he has to read it all again, we wouldn't take the time but
20 he said he wanted to refer to something and if this is the
21 something he wanted to refer to, I am giving him the oppor-
22 tunity to review it.

1 MR. FRICKER: Your question is what?

2 MR. DUBUC: Whether he has an opinion of human
3 tolerances. Let's take adults to peak G forces, taking the
4 circumstances of this accident and the occupants of the
5 troop compartment.

6 THE DEPONENT: You have several pages of very com-
7 plex data but one of the key references that is usually used
8 is the impact tolerance limits for man is approximately 50
9 G peaks at 500 G's at onset done in the John Paul Sladic
10 experiments but there is a lot more free fall data and so on.
11 We are in the range in the data provided by Turner of signif-
12 icant likelihood of their being brain damage, even considering
13 such factors as automobile accidents and infant restraint
14 systems and so on. We are in the ball park.

15 BY MR. DUBUC:

16 Q We are talking about adults. Are we in the area
17 of brain damage to adults?

18 A More than brain damage, particularly failure of the
19 systems and impacts.

20 Q In your opinion, would the adults in the troop
21 compartment have sustained damage at 220 to 480 G's?

22 MR. FRICKER: I object. If he has an opinion.

1 THE DEPONENT: One did. It takes 200-plus to break
2 a scull and somebody did break a scull.

3 BY MR. DUBUC:

4 Q You are referring to the medical person who was
5 thrown and had a head injury?

6 A If we assume he was thrown. I don't know.

7 Q In your opinion, would adults in the troop compart-
8 ment who were unrestrained and not thrown have sustained brain
9 injury?

10 MR. FRICKER: Objection. That assumes a fact that
11 has not necessarily been determined.

12 THE DEPONENT: It has not been determined.

13 BY MR. DUBUC: What has not been determined?

14 A There are so many factors involved in determining
15 whether or not an injury occurs in such a complex environment
16 such as this, such as the ability to absorb energy. An
17 individual sitting in a rear seat as an adult with a higher
18 center of gravity would probably be much more tolerant to
19 high G-loading than perhaps an infant with the possibility
20 of the rebound effect occurring a much greater degree to an
21 infant, the heavier head problem. So, consequently, I can't
22 answer that question because of the nature of the crash.

1 Q Doctor, maybe you misunderstood. My question was
2 this: In your opinion, would adults who were not seated and
3 not restrained by seats or belts either forward or rearward-
4 facing and who maintain their position by holding themselves
5 or bracing themselves have sustained brain damage in the G
6 range described by Doctor Turner?

7 A I can't answer that question for the reasons stated
8 previously.

9 Q I must have missed the reasons. What were they?

10 A We are dealing with a complex crash environment
11 in which the adults were placed in different ways, may have
12 sustained the forces in different ways as compared to the
13 infants. When we are talking about infants who were restrained
14 and facing in a certain direction and adults being unrestrained
15 and facing in other directions, we are talking about a peak
16 G that may have been reached but when averaged out might have
17 been less. The rate of onset of G may not have been signif-
18 icant for the adult in terms of the energy dissipation, let's
19 say, that the adult could take in an unrestrained position
20 compared to the infant in a restrained position.

21 Q In your opinion, could an unrestrained adult --
22 and I mean unrestrained by a seat or seat belt -- forward

1 facing or rearward facing maintain a position in the troop
2 compartment of this aircraft with the circumstances described
3 in the crash landing if the G forces are 220 to 480 peak?

4 MR. FRICKER: Is it possible? Is that your
5 question?

6 BY MR. DUBUC:

7 Q In your opinion, could it be done?

8 A Given the appropriate dissipation of the impact
9 forces on structures in the cabin, it is possible to tolerate
10 it without injury based on the information we have and, of
11 course, the results from the accident and the fact that
12 certain adults did survive without significant degrees of
13 injury.

14 Q Some without any?

15 A From the reports.

16 Q From their testimony.

17 Have you read their testimony?

18 MR. FRICKER: Objection; vague and argumentative.

19 BY MR. DUBUC:

20 Q Have you read the testimony of any surviving adult
21 who was uninjured?

22 MR. FRICKER: Objection.

As you know, this is one of the areas we have been

1 trying to pursue most vigorously because we have maintained
2 to believe some were injured.

3 MR. DUBUC: I am not interested in what you are
4 pursuing. I am interested in knowing whether the Doctor has
5 read the testimony of individuals who were adults in the troop
6 compartment who survived without injury.

7 MR. FRICKER: The basis for the objection is the
8 phrase "without injury."

9 THE DEPONENT: I mentioned previously I asked
10 Doctor Cohen to provide me with an injury profile. The only
11 information that I have read has been the sworn statements
12 of witnesses. I have not read any testimony from individuals
13 in previous cases, depositions or otherwise.

14 MR. DUBUC: When that is provided, I ask for a copy
15 of it before Doctor Busby testifies so we can cross examine
16 on it.

17 BY MR. DUBUC:

18 Q Have you been given any estimate of when you will
19 receive that?

20 A I have not even told that I will receive it.

21 Q Are you aware that a composite of troop compartment
22 injuries does exist?

1 A No.

2 Q You reviewed Doctor Goun's report, did you not,
3 Busby's Exhibit 4, Defendant's Exhibit 1302. You made some
4 notes on that?

5 A Yes.

6 Q In fact, you made a note on the first page, "Other
7 knowledgeable aerospace medical experts, however, did agree
8 with the TSU concept as it was presented in 1969," and you
9 have "evidence." What does that mean?

10 A I wondered how Doctor Goun was able to document
11 who agreed with him.

12 Q You don't know that?

13 A I don't know so I was hoping that he might give
14 reference to somebody else who had quoted him in the literature

15 Q Do you agree with him?

16 A We have already been through that, Mr. Dubuc.

17 Q I am just doing it in the context of this particular
18 phrase here. You have questioned it and I am wondering if
19 you disagree with him.

20 A My opinion was rendered before that I find the
21 concept interesting and whether or not it could be applied
22 subject to a great deal of debate, in which case I disagree

1 that it could be applied.

2 Q Attached to that part, Attachment 1, page 2 of
3 Mr. Jablonsky's report, you have underlined a sentence,
4 "Time interval of 7 and a half seconds" and so on. What
5 is the reason for underlining that?

6 A Information only.

7 Q What about the bottom of that page?

8 A Highlighting.

9 Q Are you questioning that?

10 A I had intended subsequently to go and look it up,
11 using this sheet.

12 Q You have not done that yet?

13 A I was reading it on the airplane and this was
14 under the seat in front of me, the rest of the materials.

15 Q That was this morning?

16 A I was reading it again. That is why you see different
17 colors.

18 Q On page three of that report you have some margin
19 notes opposite the statement reported at 1200 feet and you
20 have, "Where is vertical especially since troop compartment
21 had to come down." What does that mean?

22 A Firstly, if one just does not assume that the

1 aircraft became airborne over that area from its first impact
2 on the Sagon Airport side of the river, the crash would have
3 had to have had the cargo compartment come down the distance
4 that was occupied -- the troop compartment come down the
5 distance occupied by the cargo compartment because it was up
6 in the air. So, there would have been a vertical impact
7 force, and I believe that this height is approximately 23
8 feet. Somebody calculated it.

9 Q In making that statement, are you assuming that
10 the cargo compartment and troop compartment separated
11 instantaneously?

12 A I think that is a relative term. I believe there
13 is evidence in the picture of there being now in essence a
14 real scrambling of the cargo compartment with that second
15 major impact on the Saigon Airport side of the river.

16 Q In your opinion -- and I am not talking about the
17 scrambling now but your particular opinion -- did the cargo
18 compartment separate from the troop compartment instantaneously
19 or in a short period of time?

20 A In a short period of time, yes, sir.

21 Q How does that square with what you referred to
22 earlier about the erosion factor on the peak G forces? I

1 thought I heard you mention erosion and, therefore, human
2 tolerances could have sustained the 220 to 480 G's.

3 MR. FRICKER: For the record, I will object.

4 I don't recall that testimony earlier.

5 THE DEPONENT: I don't recall that testimony either.

6 BY MR. DUBUC:

7 Q You have here the cargo floor remained stationary.

8 What did you mean by that?

9 A Was advised back in March of 1980 that certain
10 pictures that were taken at the crash site showed that the
11 cargo compartment had in essence remained, at least the
12 bottom of it remained intact and in essence the people were
13 ground up by the troop compartment coming down and sliding
14 across all these people and skidding then across the rice
15 paddy.

16 It appears from new evidence that what I was looking
17 at in the picture was really the underside and aft part of
18 the forward compartment, and that, in fact, the troop compartment
19 remained stationary on the second impact on the Saigon
20 Airport side of the river.

21 Q You have some underlining at the bottom.

22 MR. FRICKER: Excuse me, Mr. Dubuc. I am sorry.

1 I don't know whether the witness misspoke but he said troop
2 compartment --

3 MR. DUBUC: If you want to make an objection.

4 MR. FRICKER: Mark that point and I will cross
5 examine on it.

6 THE DEPONENT: I was mistaken on the troop compart-
7 ment and cargo compartment.

8 MR. DUBUC: You referred earlier to me being
9 unprofessional and I think you are trying to coach the
10 witness.

11 MR. FRICKER: I am trying to have honest, clear
12 testimony. Maybe you did not hear the comment but it is
13 quite clear that the record would not have been accurate
14 and I was trying to save time.

15 MR. DUBUC: It can be fixed whatever it is.

16 BY MR. DUBUC:

17 Q At the bottom of page three there is some under-
18 lining. What is the purpose of that?

19 A This is just to highlight the fact that this
20 individual would have been unaware that there was a terminal
21 impact with higher G forces.

22 Q On page four you have a margin note, "note no"

1 something. I can't read it.

2 A That is "note, no jolt calculations." I don't think
3 people who are in amusement rides are in any jolt situation.
4 In other words, the comparison of this amusement ride to an
5 aircraft crash has been attempted in the past and in my mind
6 it is ludicrous scientifically.

7 Q Look at page five, "not as a jolt." Is that in the
8 same context?

9 A Yes.

10 Q You have at the bottom, "rates of onset. Doesn't
11 really go into rates of onset."

12 A It is obvious. Rate of onset is a jolt.

13 Q You have the same comment, "Doesn't address jolt,"
14 on page 1.

15 A That is correct.

16 Q The jolt is the 220 to 480 G's referred to in Doctor
17 Turner's report. Is that the report you are talking about?

18 A Let me correct myself. That could be peak G but
19 the jolt is the rate of onset of G and, indeed, at high levels
20 of G one might equate jolt with a high level since they are
21 occurring in such a brief period of time. It is really
22 squashing the spread-out G into what really occurred in the

1 brief period of time, peak G.

2 Q In your comments and in your opinions as you are
3 giving them to us today, the jolt you referring today is the
4 terminal impact in the rise of the topography at the end of
5 the troop compartment's travel; is that correct?

6 A As well as other jolts associated with particularly
7 the last two impacts before the final skidding stopped.

8 Q I didn't notice any computations by Doctor Turner
9 as to other peak jolts. Are there some that you are referring
10 to?

11 A I didn't either and I don't believe they are possible.

12 Q There weren't any others?

13 MR. FRICKER: Other jolts or other computations?

14 I object to the form. Vagueness.

15 BY MR. DUBUC:

16 Q Then the next page of the next section, Report A,
17 Acceleration, you have the reference "don't address jolt" and
18 then you have circled the "5 foot dike." What is the signifi-
19 cance of that?

20 A From what I could see on the photos, I didn't see
21 any strike marks on the dike.

22 Q None at all?

1 A I just put a circle or question mark around it.

2 Q In your opinion from your observations, am I correct
3 you do not see any impact with the dike that is referred to?

4 Do I understand your answer correctly?

5 A From the photos I have seen, I have not seen any
6 marks that would indicate a tearing apart of the dike.

7 Q His context is contact with the dike. Have you
8 seen any photos of contact with the dike?

9 A Do you mean struck or touched?

10 Q To the extent there is a mark.

11 A A significant mark, no.

12 Q Then you have underlined, "troop compartment traveled
13 a total of 2012 feet before coming to rest, right side up."

14 What is the significance of that underlining?

15 A To recheck against the chart which was in my brief
16 case.

17 Q Have you done that yet?

18 A No.

19 Q On the next page you have the same jolt comment.

20 Then there is a Report B as part of this, Analysis
21 of Physiological Effect of Change of Pressure, and you have
22 a margin note, "probably shorter." What does that mean?

1 A I had always been led to believe it was in the range
2 of .23 seconds.

3 Q Do you mean the decompression time?

4 A Yes. I had worked it out using the common formula
5 and photographs and came to .3 of a second for all intents
6 and purposes from a physiologic standpoint, the differences
7 are probably insignificant.

8 Q Then at the end of that section you have some notes,
9 something about 5 to 10. Is that time time frame in which
10 bends occur? Are you questioning his time frame?

11 A Yes. It depends on the rate of ascent in a situation
12 like this, but Doctor Henry has done some research that shows
13 you can't identify bends as short as 5 minutes after exposure
14 to altitude.

15 Q Then, Analysis of Hypoxia, you have several notes,
16 Report C. Maybe you can tell us what those notes mean?

17 A It is my impression that Doctor Gaume was attempting
18 to rewrite the textbook of aviation physiology and consequently
19 I proceeded to make notes on reading it twice. Then, as you
20 can see on later pages, I sort of gave up, but making a flat-
21 out statement, "At 23,400 ft. the alveolar pO_2 (oxygen pres-
22 sure) is approximately 28 mm Hg."

1 We are back to using the Luft data from Randall and quoting
2 data that is taken from individuals who are exposed for much
3 longer periods of time than the instant exposure that occurred
4 in this C5A decompression. On a sudden decompression from
5 5,000 feet to 2,304 feet in less than .6 seconds, hypoxia
6 would be evident to the observer in two to three minutes.
7 I don't know what you would be observing. I underlined it
8 specifically because I could not understand what he would be
9 referring to -- cyanosis, unconsciousness, purposeless move-
10 ments or failure to punch out lights on a performance battery.

11 Q You have a comment there, "this is wrong." What is
12 it that you think is wrong? It is in the lower left-hand side.

13 A This is where I am particularly concerned because
14 the factor that determines the partial pressure of arterial
15 oxygen reaching the brain is not the brain blood flow but the
16 partial pressure of oxygen that is created in the arterial
17 blood in the lung. Consequently, his statement is absolutely
18 wrong.

19 Q What statement is that?

20 A He is making a statement here that "increasing the
21 oxygen available to the brain by as much as 35 percent at
22 23,400 feet, which would raise the pO_2 of the cerebral blood

1 to more than 40 millimeters of mercury. This would be
2 equivalent to the arterial pO_2 expected at less than 18,000
3 feet."

4 It is a simple physiologic fact that he is incorrect.

5 Q You have a margin note on the right, "not so,
6 translation time" something -- I can't read it.

7 A When oxygen enters the lungs in air, the transition
8 time of the blood to the lungs is long enough for a pO_2 to
9 be released and oxygen to be obtained unless there is a
10 problem with a diseased state which interferes with oxygen
11 transport across the lung wall or unless the individual has a
12 poor ratio of ventilation to blood flow through the lung.

13 A collapsed lung would be an example. So the only thing I
14 could think of that he could apply this statement to would be
15 if an individual had inadequate ventilation to profusion ratio
16 leading to a decreased arterial oxygen partial pressure as a
17 result, not enough oxygen reaching the blood that is going
18 through the lung that by increasing the depth of breathing and
19 hyper or re-expanding the lungs that his statement would be
20 plausible. But, on the other hand, by increasing the depth
21 and rate of breath as we discussed several times in this
22 deposition it is a fact that it is the carbon dioxide blowing

1 off that is most important to allow space for oxygen to
2 come in than simply hyperventilating to allow for the amount
3 of blood that can be picked up.

4 Q In your opinion?

5 A And I am sure in everybody else's opinion.

6 Q You have a reference to page 27 of something.

7 A That is page 227.

8 Q It is a reference to Katy Schmidt.

9 A No. It is Van Liere and Stickney.

10 Q You have a reference to Katey Schmidt. What is
11 that a reference to?

12 A This research conducted by these distinguished
13 scientists was conducted in 148 at sea level in a stabilized
14 condition, not under the types of environment that we are
15 talking about in the crash. I am unaware of any cerebral
16 blood flow experiments that have been conducted related to
17 altitude exposure and will attempt to determine this in
18 case I have inadvertently missed a reference.

19 Q You have a reference on the next page to pressurized
20 for the Cuban Stowaway. What does that mean?

21 A I was interested in whether or not the forward
22 compartment before a leanding gear becomes pressurized after

1 the gear closes.

2 Q On a DC8?

3 A I was just curious.

4 Q Do you think it is pressurized?

5 A It is in a spacecraft.

6 Q Do you truly believe the space well of a DC8 is
7 pressurized?

8 A I don't know. I will check that.

9 Q Would you look at the next page. I see some more
10 notes, "CO₂" arrow down "counteracts hypoxia" arrow up. "What
11 is reactivity of infants brain vessels." Then you have several
12 things underlined and reference to page 277. What does the
13 note mean?

14 A The reference?

15 Q No, your note.

16 A It is stated in the literature and it becomes a
17 physiologic fact from a great deal of research that mild
18 hyperventilation counteracts the hypoxic stimulus to brain
19 blood vessel dilation. And I was just asking myself a question
20 as to what really is the reactivity of the infant's brain
21 vessels to this complex picture.

22 Q You either read or wrote -- I can't remember which --

1 an article on the elasticity and reaction of adult vessels,
2 did you not?

3 A It included infant vessels as well. That was the
4 purpose of the study because infants, when their fontanel
5 close, develop a different elastic picture, for their brain
6 blood vessels.

7 Q You have one note on Mr. Edwards. That would be
8 Exhibit D-1298. You have the note relevant to what? Relevant
9 to G-load? What does that mean?

10 A That was at the point I gave up reading the paper.

11 Q Busby Exhibit 7 is the diagram of the troop
12 compartment with several names in there. You apparently
13 examined that before this deposition; is that correct?

14 A It was more incorporated in materials that had
15 been provided to me by the law office. I was interested in
16 determining where various people were.

17 Q Why were you interested in that?

18 A I wanted to see what the follow-up basically would
19 be on the crash injury pattern. This was the first part of
20 the question. I saw this on the tail. I said, "If you have
21 this, do you have a crash injury pattern?"

22 Q You have not looked at that yet?

1 A No.

2 Q Do you have any idea of the injuries or noninjuries
3 of any of the people depicted on Exhibit 7?

4 A Not at this time, but I have information from the
5 collateral report.

6 Q You don't have the exact pictures listed that you
7 look at but I do have the Traynor pictures. Would you take
8 a look through these and tell me if there are any pictures
9 in here in which you expressed an interest in getting copies.
10 Just take the one with the description out.

11 MR. FRICKER: I understand where you are coming
12 from, Mr. Dubuc, but I have to object since there would be
13 no way unless he has a photographic memory of knowing whether
14 the ones he is looking at now are indeed the ones he requested
15 earlier.

16 MR. DUBUC: I am only producing those because of
17 your representation that those were the Traynor color pictures.

18 MR. FRICKER: You are misunderstanding me. I think
19 it would be virtually impossible for him to say within the
20 Traynor pictures he previously requested so and so and so.
21 He can certainly look through them in the few minutes we have
22 remaining and indicate which ones he feels are of significance.

1 MR. DUBUC: I am doing the very best I can in a very
2 poor scenario since you did not bring with you what he looked
3 at other than the telephone list. So I am doing the best I
4 can under the circumstances. I will repeat for the record,
5 in view of your objection, it is my understanding that the
6 witnesses are supposed to appear with what they have examined
7 and rely upon and in this case what we are referring to is
8 pictures that you or he has written down he is specifically
9 relying upon for this deposition.

10 MR. FRICKER: Let the record reflect we have taken
11 a little break here. Doctor Busby has gone through a series
12 of photos which appear to be prints of the Traynor color
13 negatives. Some of them are marked and some are not. He
14 has selected out in two groups prints. I note it is now about
15 18 after 7. I think we have really gone just about the four
16 hours net we talked about. I would be happy to have you
17 mark these any way you want, Mr. Dubuc, but under the circum-
18 stances we are going to have to terminate this virtually
19 momentarily and I will volunteer to undertake to provide
20 you with the plaintiff's trial exhibit numbers associated
21 with the numbers that I was able to get over the phone earlier
22 in the deposition so you will be able to know specifically

1 those which he had reviewed in our office and selected. I
2 think we are going to have to terminate pretty quickly.

3 MR. DUBUC: I want to have Doctor Busby tell me
4 in this particular section of the deposition about what he
5 said he observed to be fire damage.

6 I don't think we have gone the four hours with the
7 breaks that have been taken, particularly to find out which
8 pictures were taken. I am trying not to bring him back
9 although I understand he will be here all day tomorrow. I
10 understand your need to get out. I have already postponed
11 a personal commitment of mine and I am trying to finish this.
12 If we are not going to be able to finish it, we are not going
13 to close it either because we do have some things referred to
14 that we do not have.

15 Mr. Reporter, will you mark on the back of these,
16 subject to later putting stickers on them if you want to, just
17 so we can identify something, Busby 10-A through however far
18 it goes. At some point I think we will agree on some marking
19 for these pictures but for now let's do it Busby 10-A through
20 whatever so we know what we are talking about.

21 BY MR. DUBUC:

22 Q What is the distance between the two piles?

1 A One represents general scenes in which I was
2 particularly interested in the nature of the approach, the
3 terrain, the contacts that the aircraft made with the terrain
4 and the various evidences of contacts and elements of the
5 broken up airplane made with the ground at sites subsequent to
6 stopping.

7 MR. DUBUC: We will mark them 10-A as far as they
8 go.

9 [Busby Exhibits 10-A through 10-I were
10 marked for identification.]

11 BY MR. DUBUC:

12 Q What is the other pile?

13 A This represents evidence that the troop compartment
14 came to rest against a knoll or a hill.

15 MR. DUBUC: We will mark those 11-A as far as they
16 go.

17 [Busby Exhibits 11-A through 11-I were
18 marked for identification.]

19 BY MR. DUBUC:

20 Q With respect to 10-A, that was a general photograph?

21 A Yes, specifically looking at the tracks.

22 Q What was the significance of 10-B to you?

1 A I was interested in the direction of what appeared
2 to be a fire pattern in that and also the general state of the
3 troop compartment.

4 Q Did you make any determination of what portion is
5 represented in 10-B is fire evidence?

6 A It appeared to me the areas of brown gave evidence
7 of possible fire ball effect. In other words, there is not
8 carbonization but a loss of green color or the vegetation.

9 Q Any evidence of fire in the troop compartment itself?

10 A There is some darkening. I understand the troop
11 compartment was normally white or silver and also that there
12 is some obscuration of the insignia.

13 Q The insignia being where?

14 A The star up the side of the troop compartment. I
15 am looking at that from some distance but on other pictures.

16 Q Did you make any determination in your opinion as
17 to what might have caused any suspected or alleged fire damage,
18 the kind of fuel?

19 A Jet fuel.

20 Q So, in your opinion, there was jet fuel in the area?

21 A It may have been in a liquid form but a vaporized
22 crash that would form a fire ball.

1 MR. FRICKER: Mr. Dubuc, it is now 7:30. By my
2 calculations we have gone well over the four hours.

3 Responding to a comment you made earlier, it is true
4 we took breaks but I was keeping track of it and I am confi-
5 dent that we have gone over the agreed time. I will give you
6 another five minutes to identify on the record or use any way
7 you wish but at that point we are going to have to leave and
8 I am giving you notice of that and I am trying to cooperate
9 but we have to terminate within five minutes.

10 MR. DUBUC: I am not agreeing to that, Mr. Fricker.

11 MR. FRICKER: Then we will terminate it now.

12 Let's go.

13 MR. DUBUC: Note for the record that this deposition
14 is not terminated in our opinion and that the witness did not
15 bring with him things he relied upon and referred to and,
16 furthermore, counsel did not show us the courtesy of bringing
17 a list of pictures in his office and we will move to preclude
18 Doctor Busby's testimony at trial until we have had an
19 opportunity to complete this deposition.

20 For the record, Exhibit 12 is a copy of the notes
21 from the Doctor's pocket; is that correct?

22 THE DEPONENT: That is correct.

1 [Busby Exhibit No. 12 was marked
2 for identification.]

3 [The deposition was suspended at 7:35 p.m.]

6 DOUGLAS E. BUSBY, M.D.

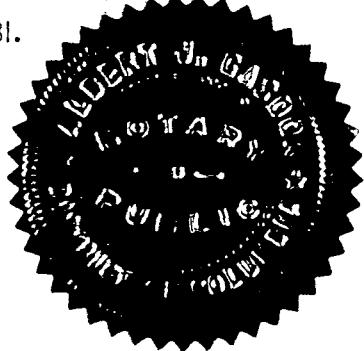
CERTIFICATE OF NOTARY PUBLIC/REPORTER

UNITED STATES OF AMERICA
DISTRICT OF COLUMBIA

I, ALBERT J. GASDOR, a Notary Public in and for the District of Columbia, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn by me; that the testimony of said witness is a true and accurate transcription of the stenographic notes taken by me and thereafter reduced to written form by me and/or under my direction and supervision.

I further certify that I am neither counsel for, related to, nor employed by any of the parties to this action in which this deposition was taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this litigation.

IN WITNESS WHEREOF, I have hereunto set my hand and
affixed my notarial seal this 23rd day of December,
1981.



My Commission expires:

July 31, 1985

Albert J. Gordon
Albert J. Gordon

Albert J. Gasdon

Notary Public in and for
the District of Columbia